

[SEQ. ID NO: 3]

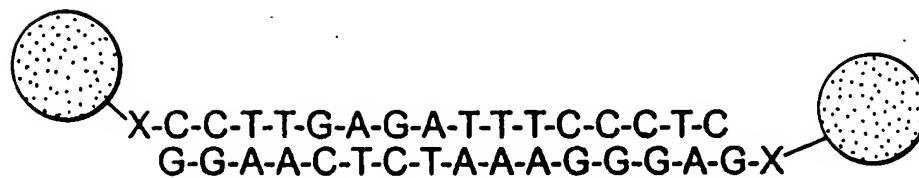
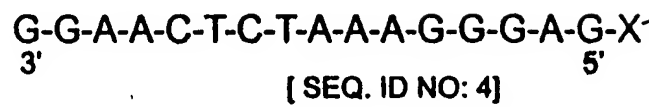


FIG. 2

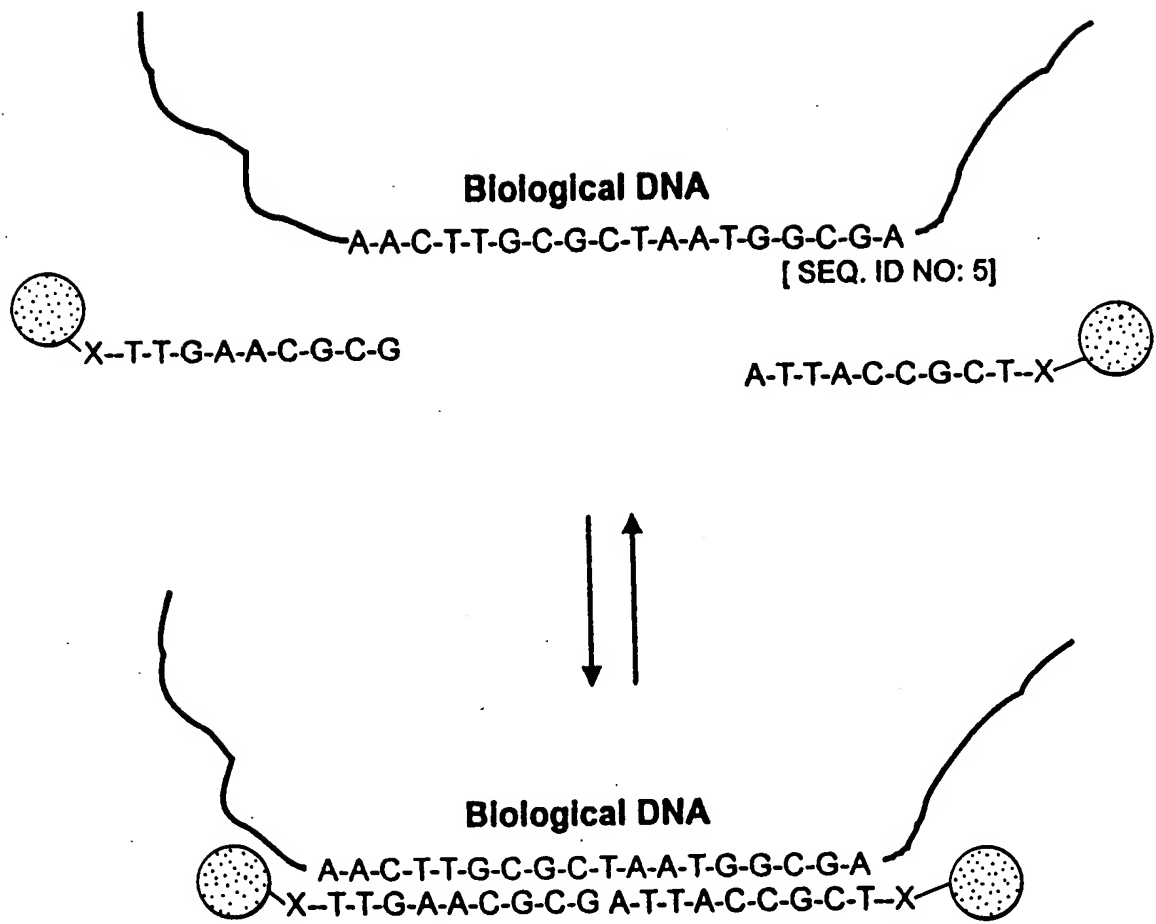


FIG. 3

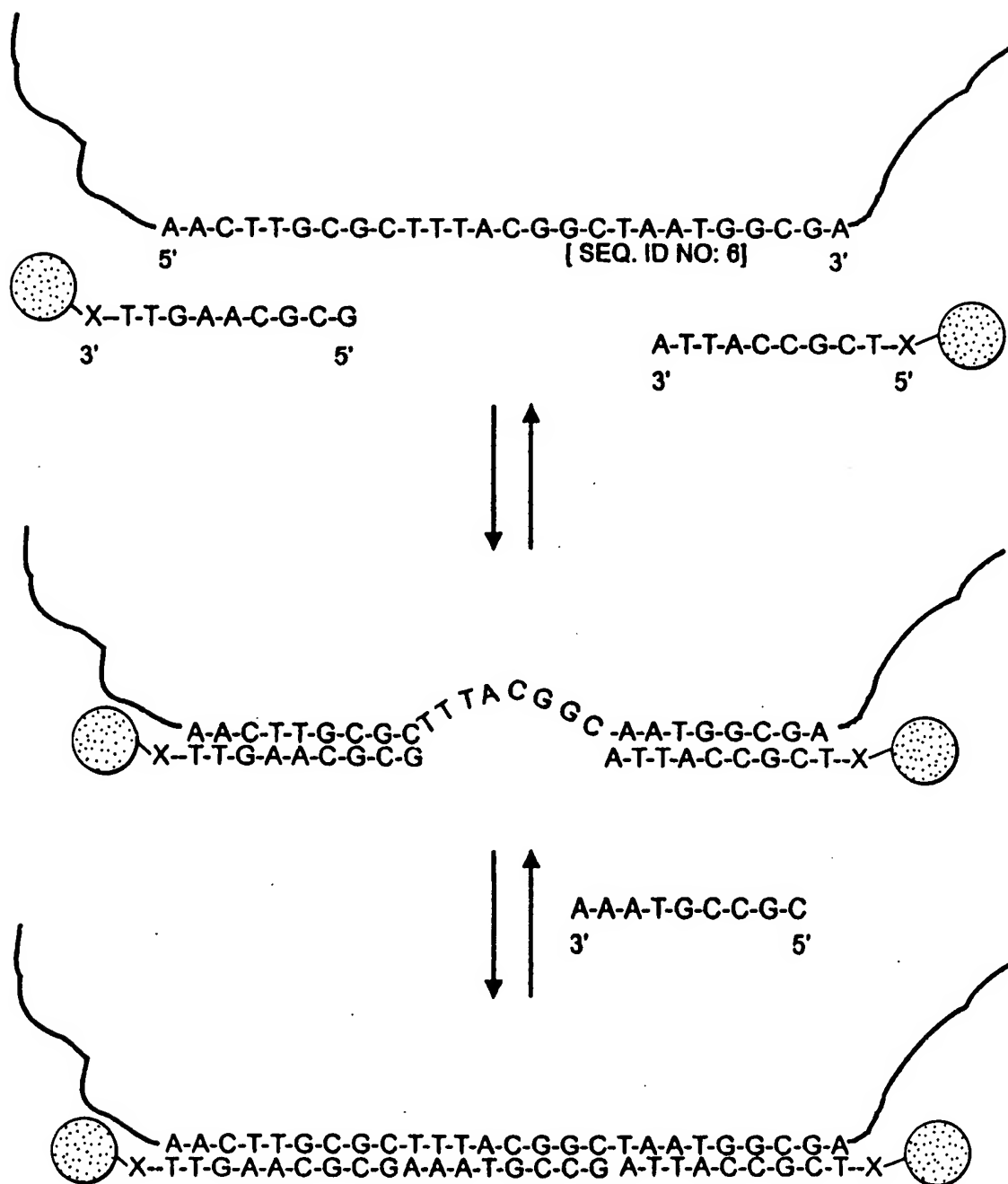


FIG. 4 ^{5'} A-T-G-G-C-A-A-C-T-A-T-A-C-G-C-G-C-T-A-G ^{3'} Linking oligonucleotide
^{3'} A-T-A-T-G-C-G-C-G-A-T-C-T-C-A-G-C-A-A-A ^{5'}
 [SEQ. ID NO: 2] [SEQ. ID NO: 1]

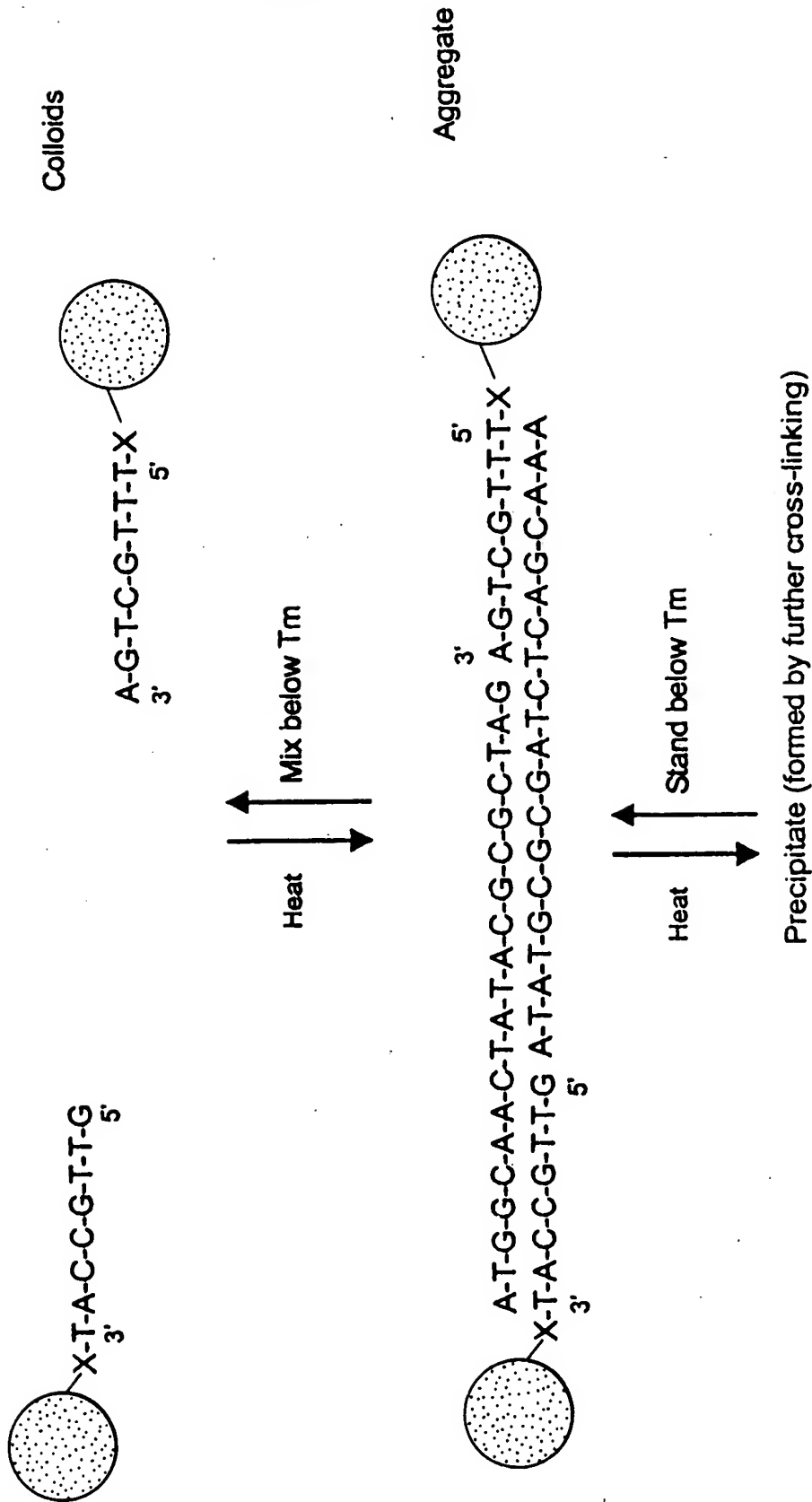


FIG. 5

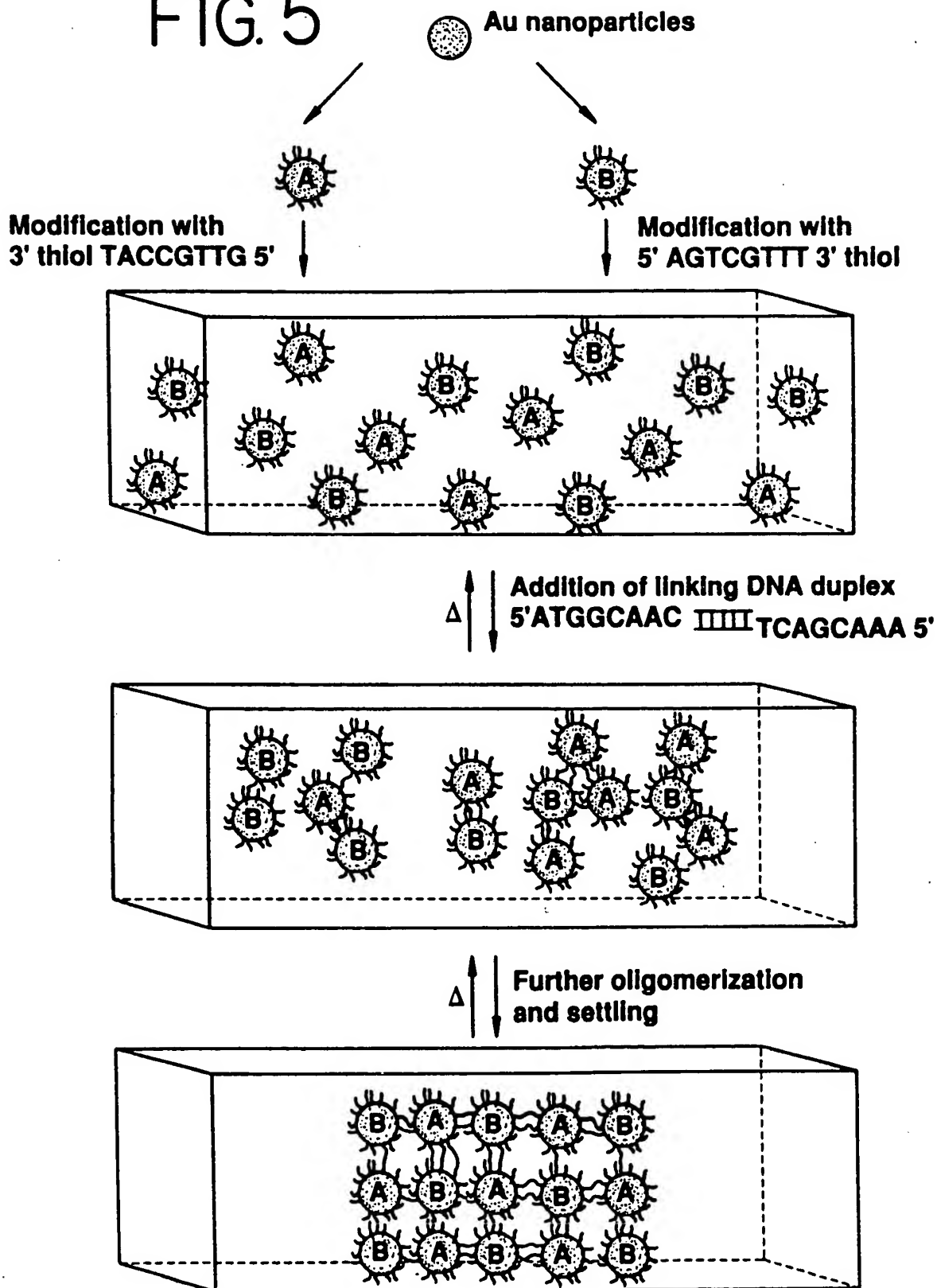


FIG. 6A FIG. 6B FIG. 6C



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FIG. 7

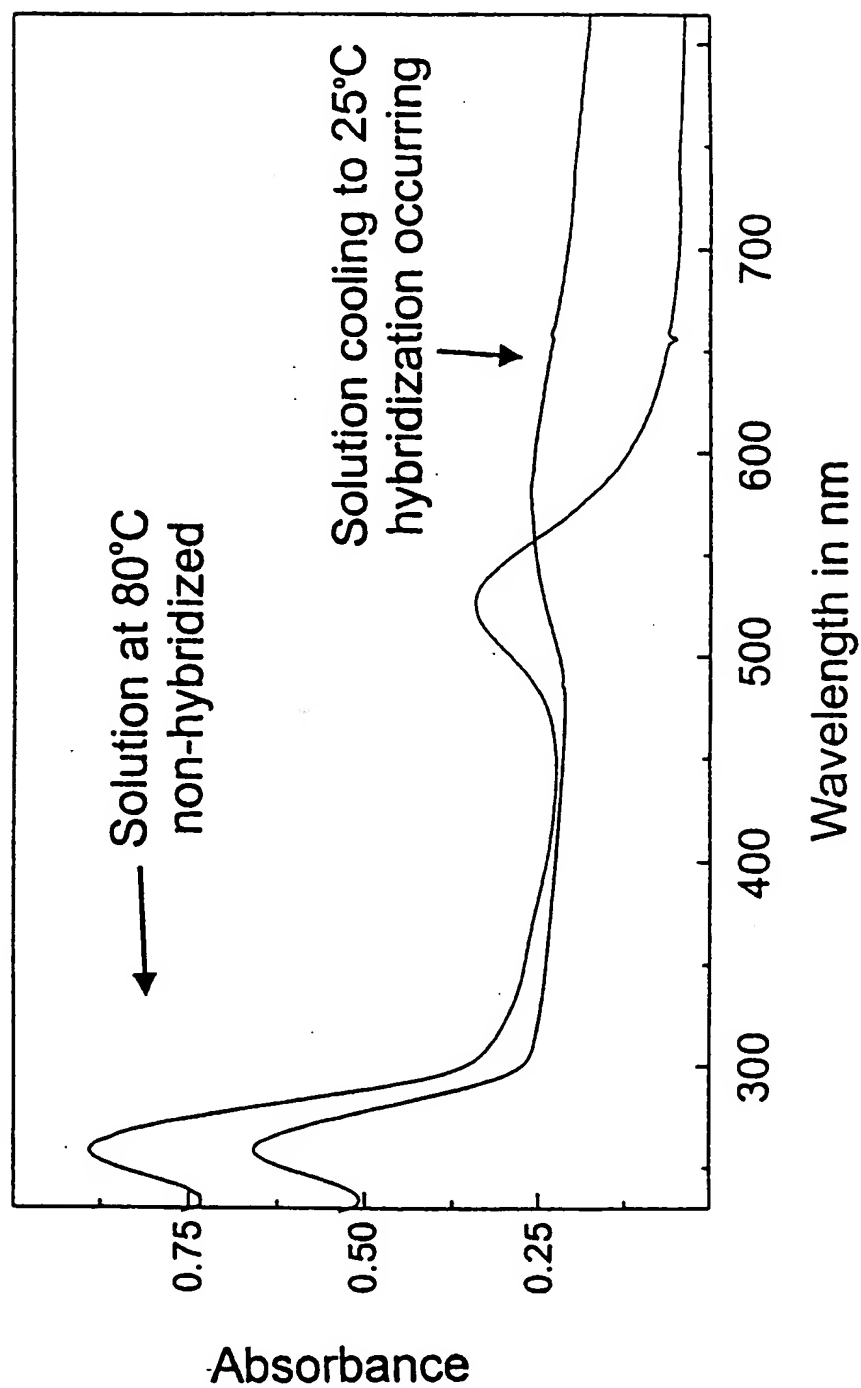


FIG. 8B

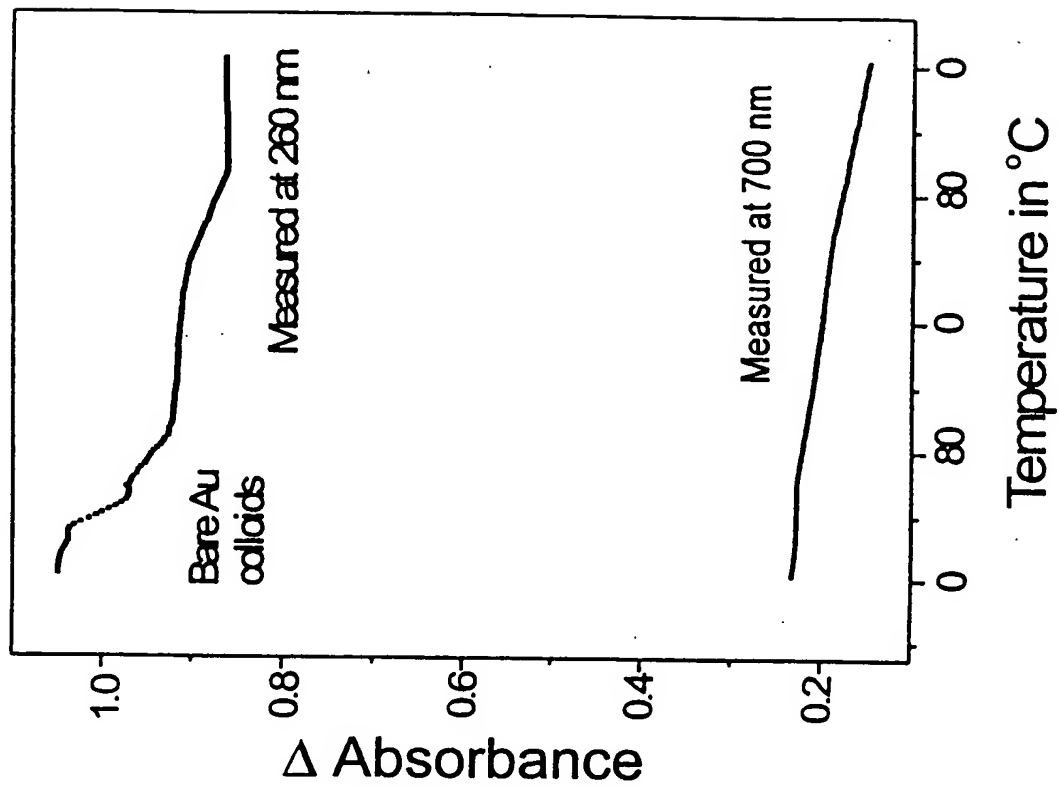
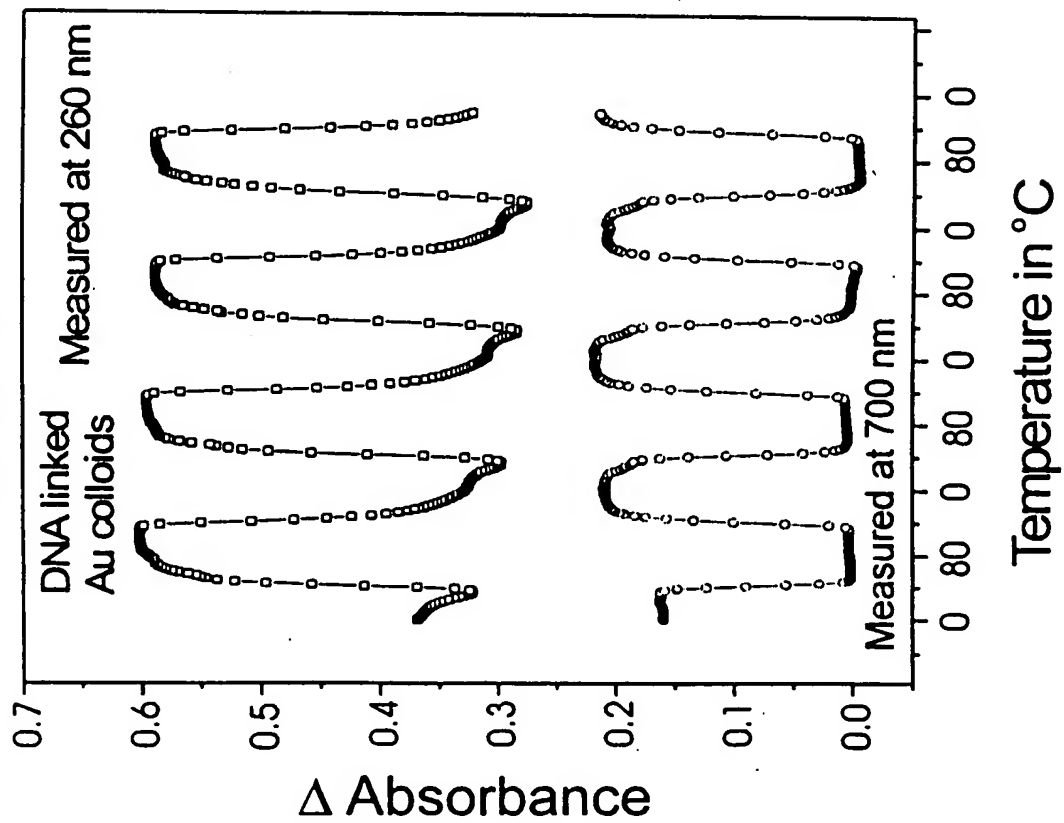


FIG. 8A



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FIG. 9A

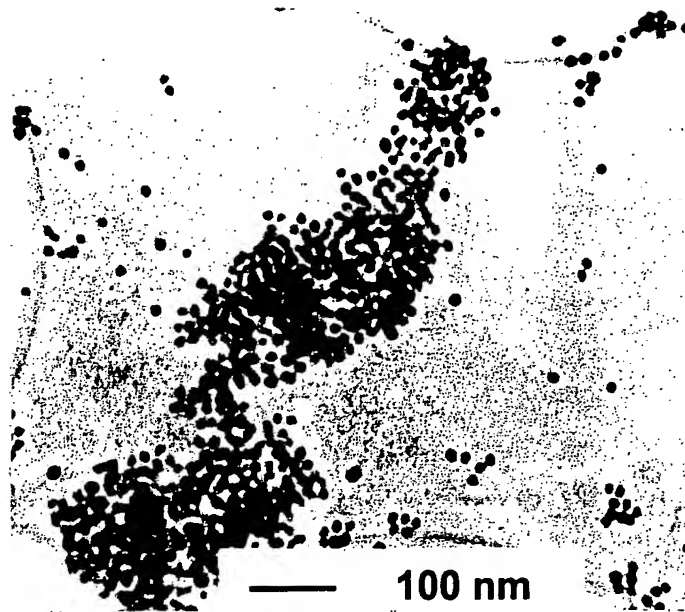
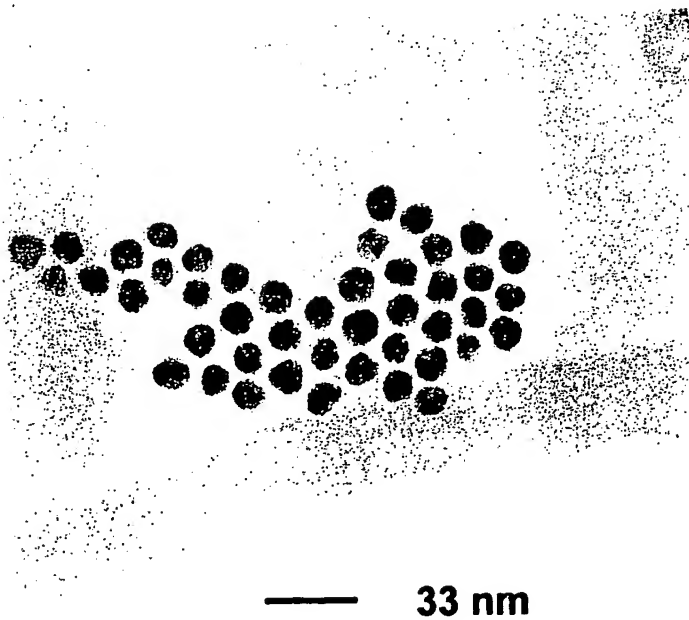


FIG. 9B



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FIG. 10

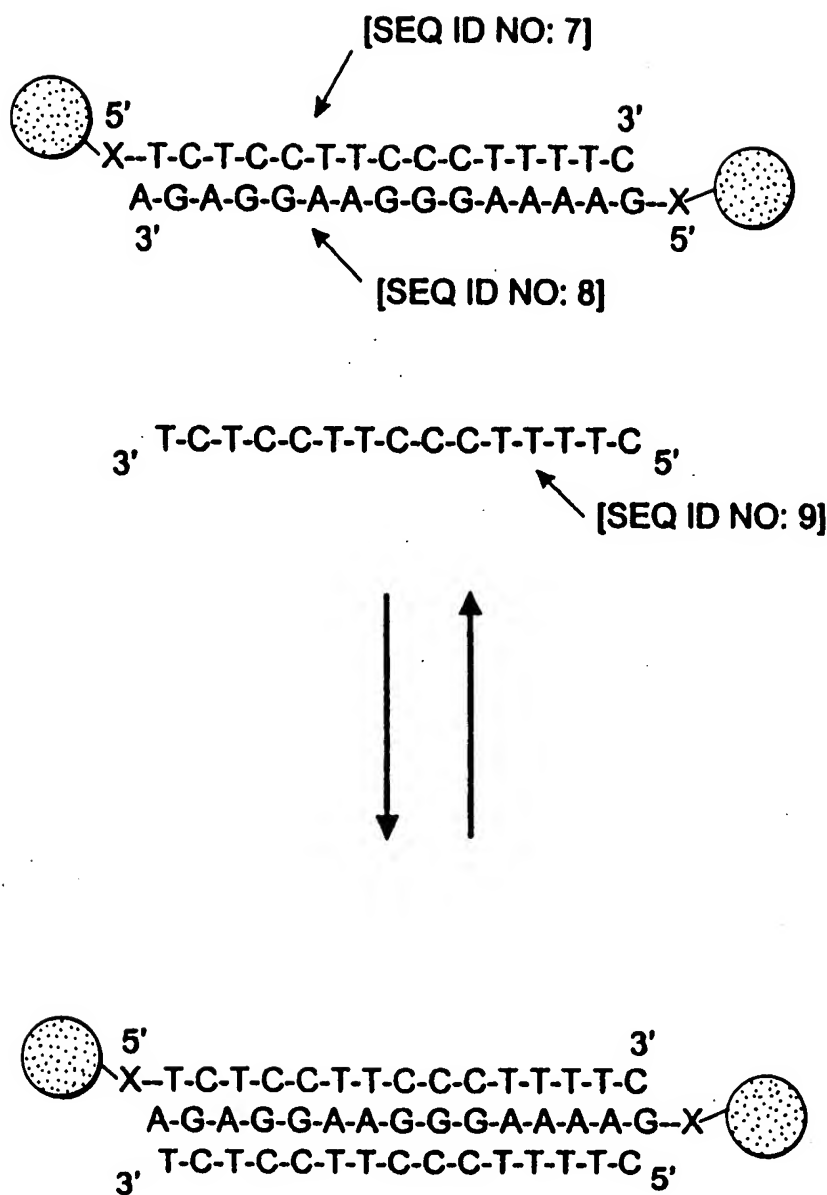


FIG. 11

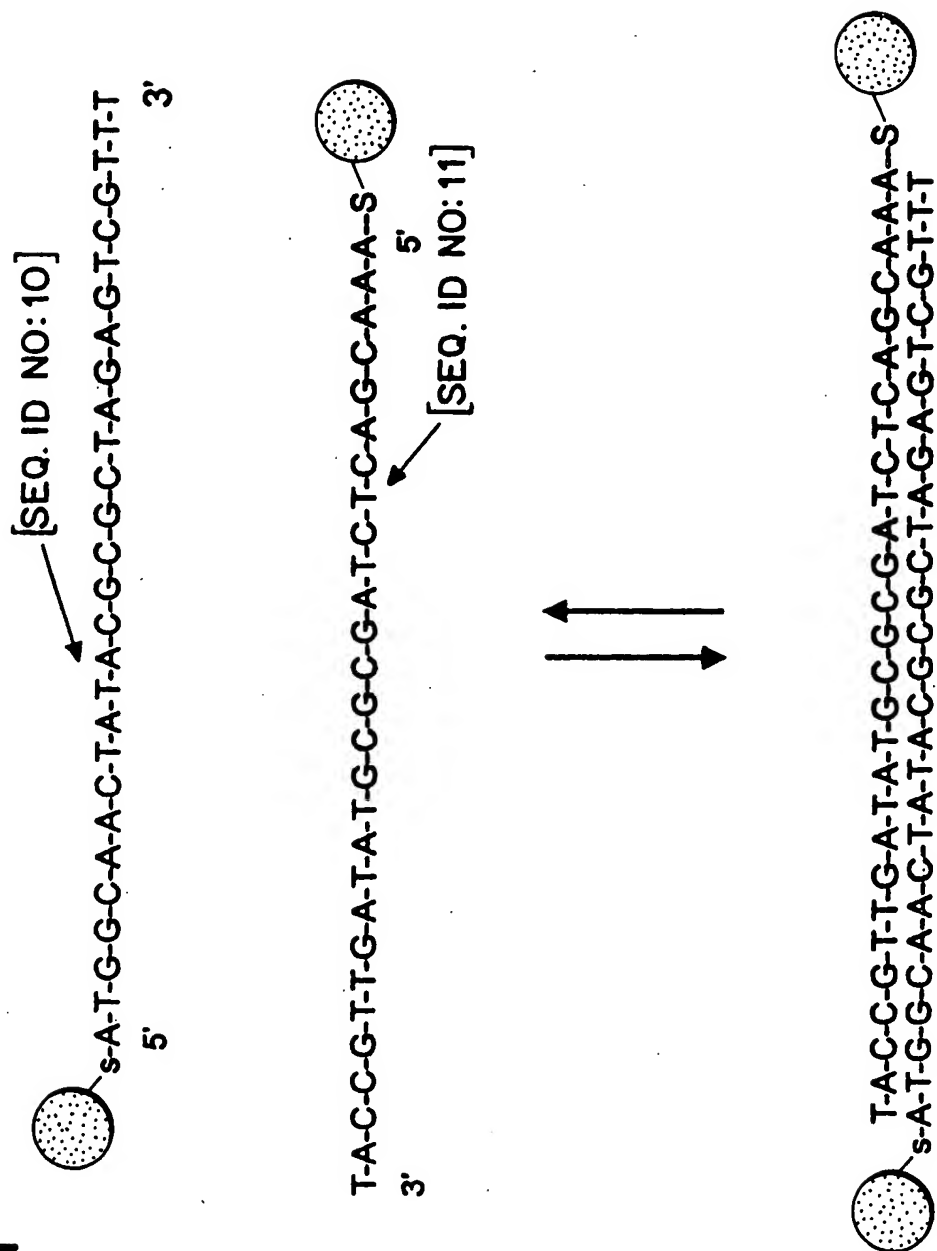


FIG. 12A

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Complementary Target

[SEQ. ID NO:12]

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

FIG. 12B

Probes without Target

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G

FIG. 12C

Half Complementary Target

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-T-G-G-C-A-A-C-T-A-T-A-C-G-C

FIG. 12D

Target - 6 bp

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

FIG. 12E

One bp Mismatch

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' A-G-C-A-T-G-G-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

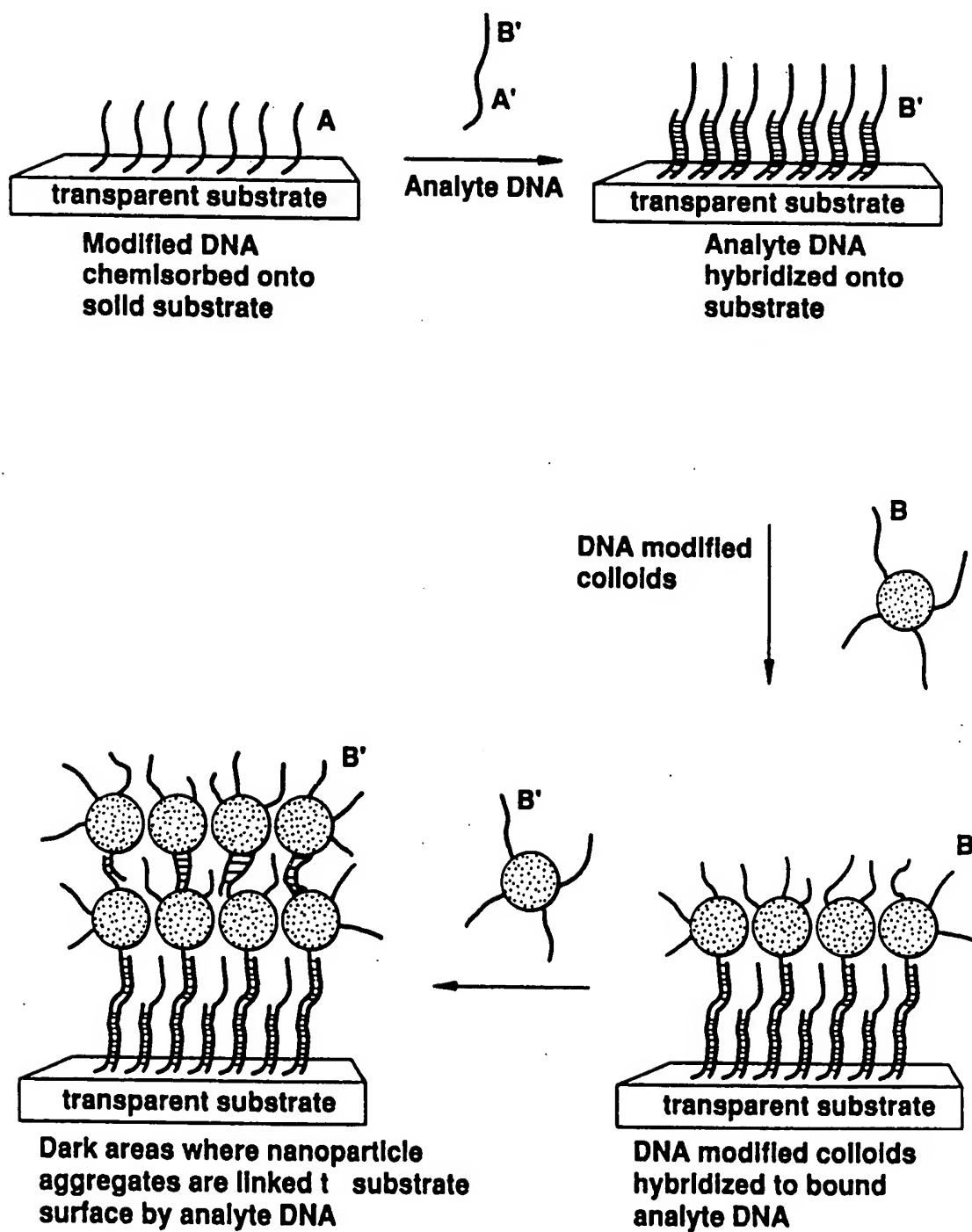
FIG. 12F

Two bp Mismatch

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' A-G-C-A-T-G-T-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

1000978/68001

FIG. 13A



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FIG. 13B

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transparent substrate

thiol terminated
modification of
surface

transparent substrate

gold
nanoparticles

A

transparent substrate

thiol modified
DNA adsorbed
onto particles

transparent substrate

B' analyte DNA
strand

A'

transparent substrate

analyte DNA hybridized to
DNA modified nanoparticles

DNA modified
nanoparticles

B

transparent substrate

nanoparticle
linker strand

C'

B'

transparent substrate

dark area where
nanoparticle aggregate linked
to substrate by analyte DNA

DNA modified
nanoparticles

C'

transparent substrate

100097-12001

FIG. 14A

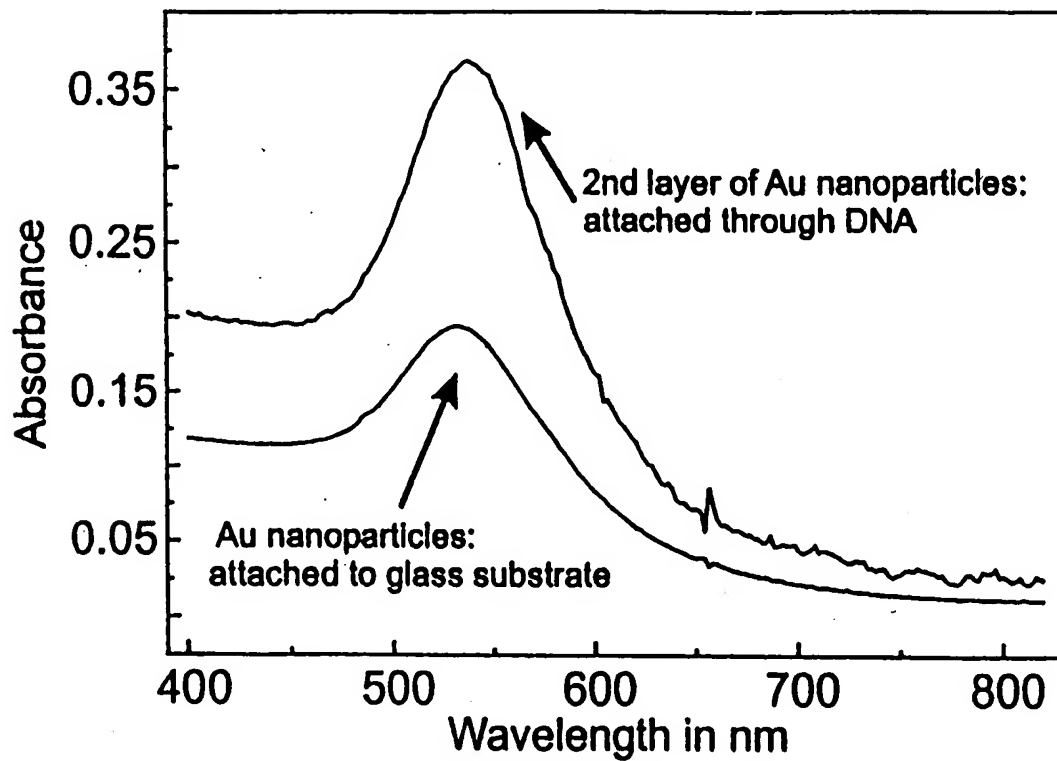
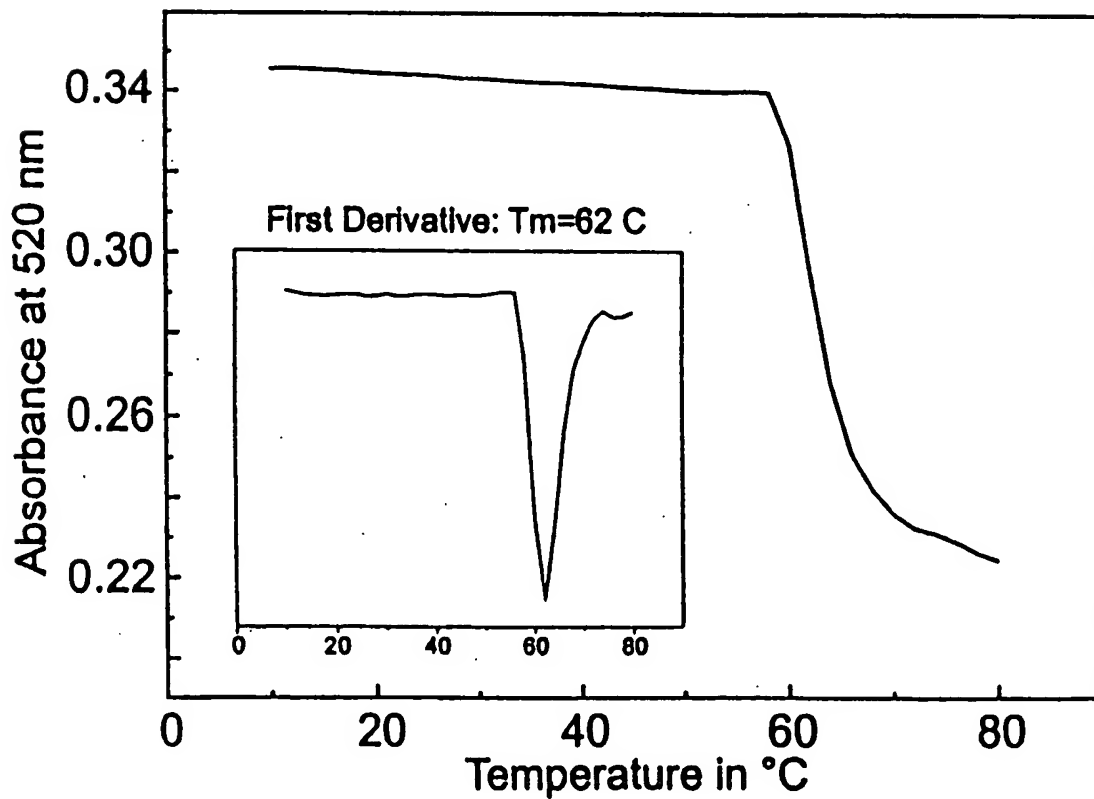


FIG. 14B



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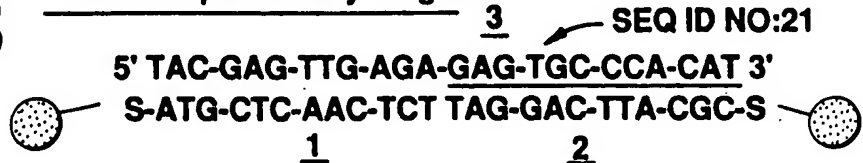
SEQ ID NO:19

SEQ ID NO:20



Half-Complementary Target

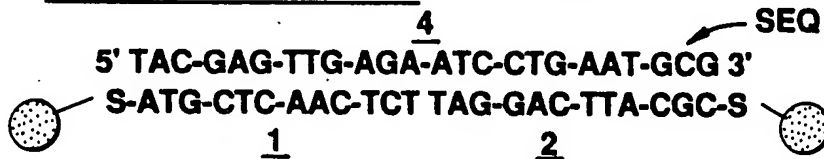
- SEQ ID NO:21



Complementary Target

T_m=53.5°C

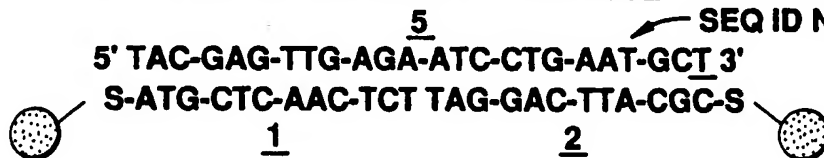
- SEQ ID NO:22



ONE Base-Pair Mismatch at Probe Head

T_m=50.4°C

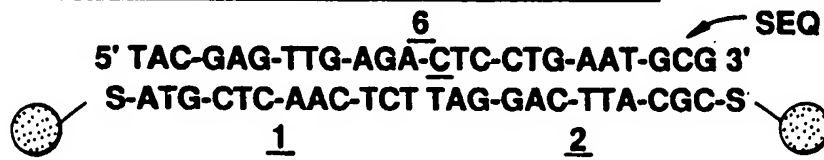
- SEQ ID NO:23



ONE Base-Pair Mismatch at Probe Tail

T_m=46.2°C

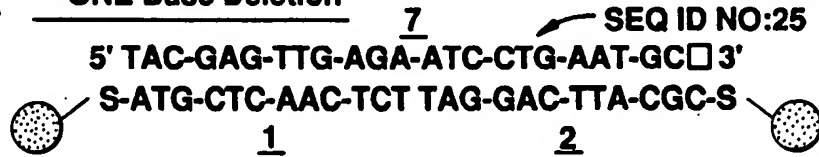
SEQ ID NO:24



ONE Base Deletion

T_m=51.6°C

SEQ ID NO:25



ONE Base-Pair Insertion

T_m=50.2°C

SEQ ID NO:26

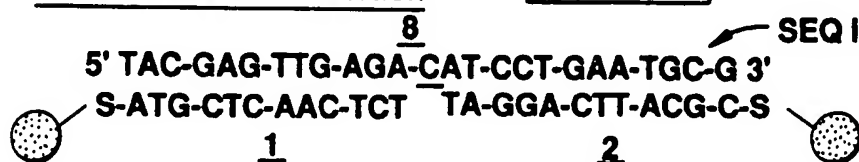


FIG. 16A

24 Base Template

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3'
 -S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S -
 1 2

FIG. 16B

48 Base Template with Complementary 24 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-ATC-CTG-AAT-GCG 3'
 -S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT TAG-GAC-TTA-CGC-S -
 1 2

FIG. 16C

72 Base Template with Complementary 48 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-TAT-ATT-GGA-CGC-TTT-ACG-GAC-AAC-ATC-CTG-AAT-GCG 3'
 -S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT-ATA-TAA-CCT-GCG-AAA-TGC-CTG-TTG TAG-GAC-TTA-CGC-S -
 1 2

FIG. 17A

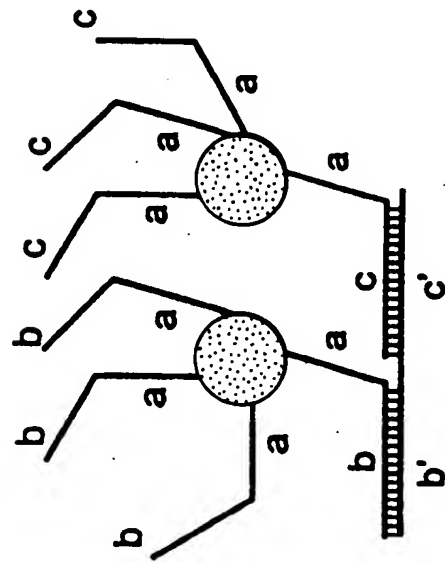


FIG. 17B

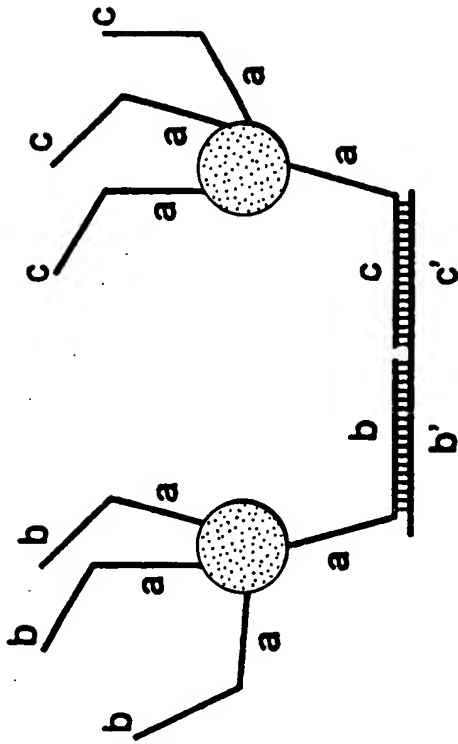


FIG. 17C

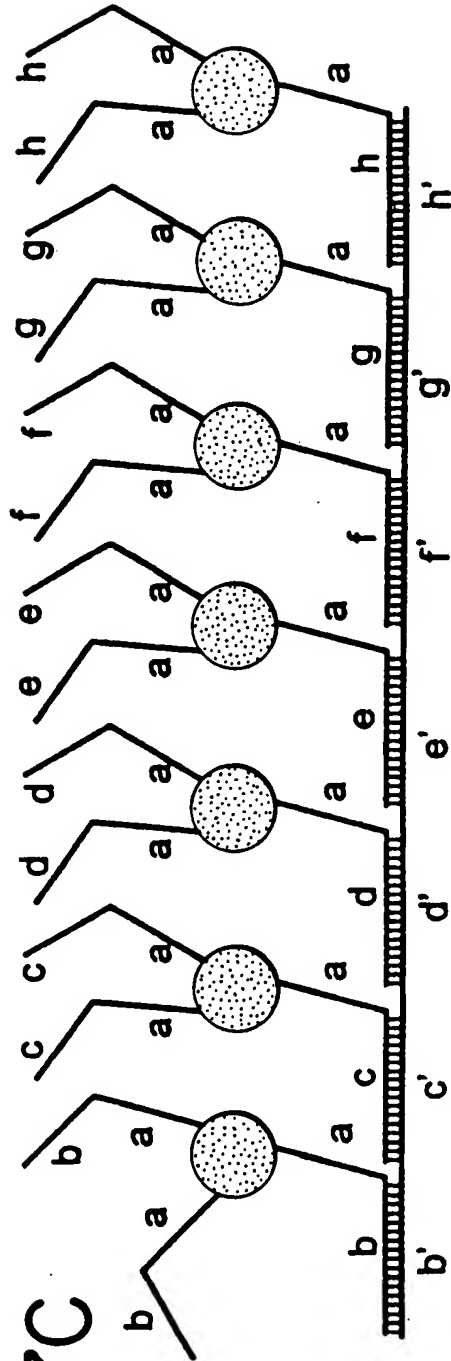


FIG. 17D

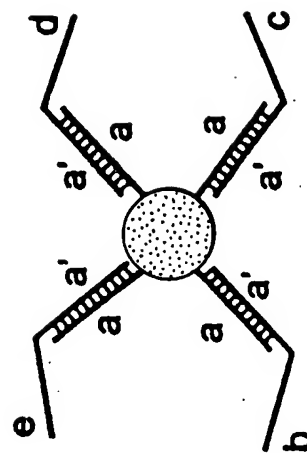
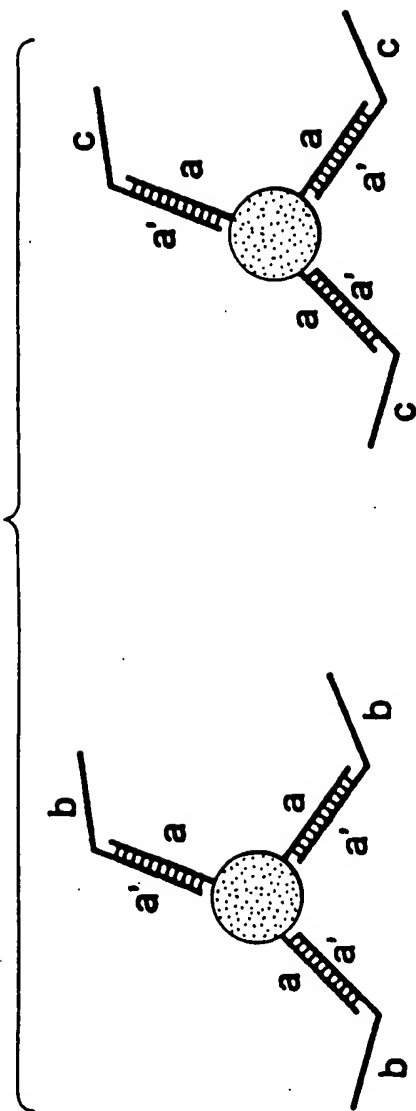


FIG. 17E

FIG. 18

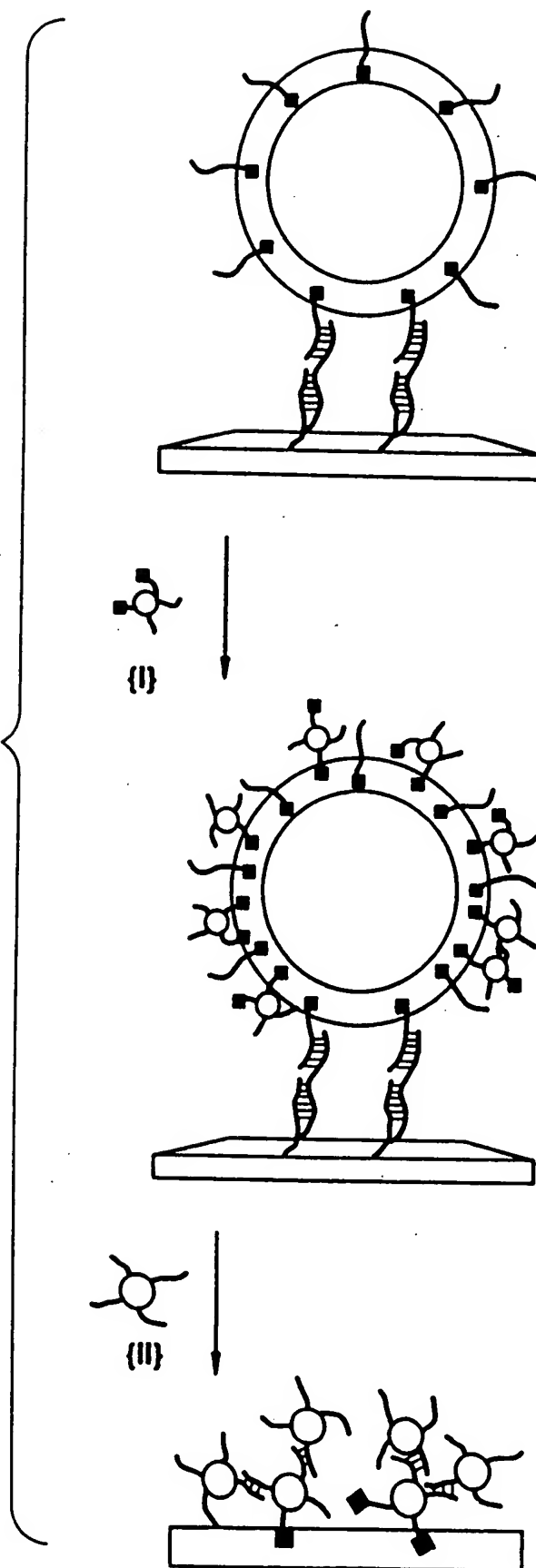


FIG. 19A

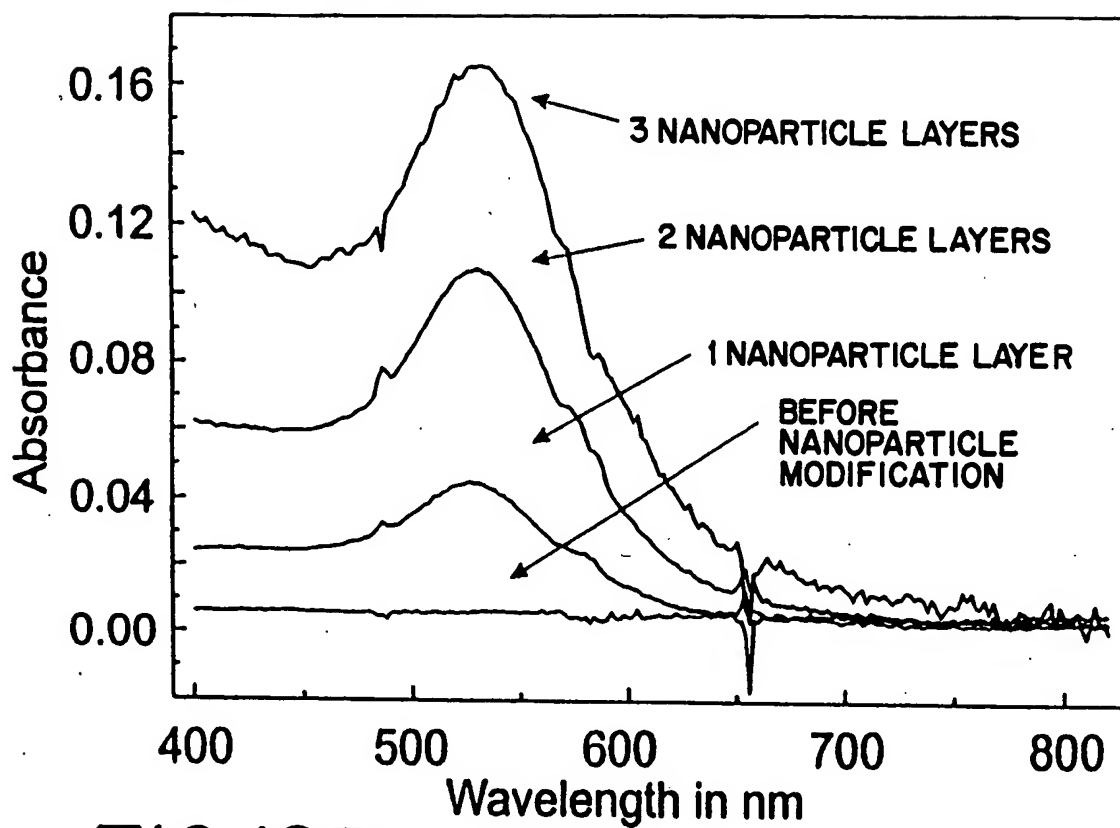


FIG. 19B

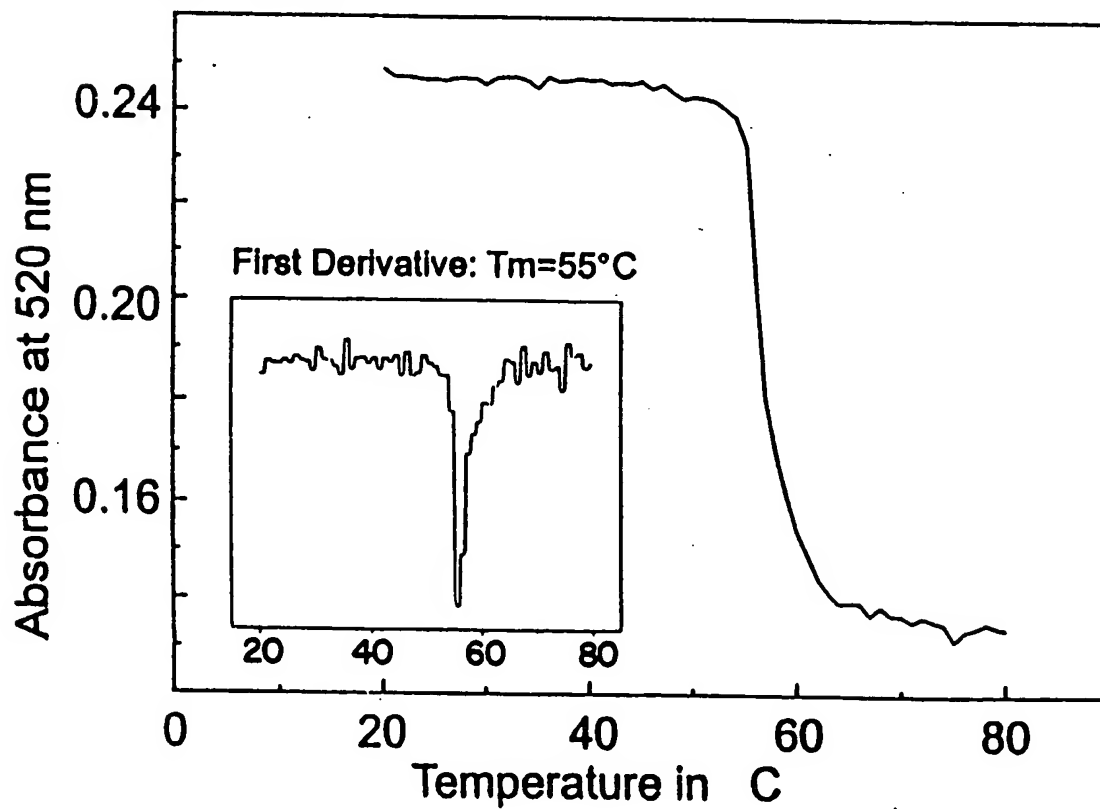


Diagram illustrating a neural network structure, likely representing a sequence of neurons or nodes. The network consists of several nodes (represented by circles) connected by lines. The connections are labeled with 'd' and 'a', and some nodes are labeled 'target'.

The diagram shows a complex, interconnected network of nodes. Each node is a circle, some of which are shaded with a stippled pattern. Lines connect the nodes, with labels 'd' and 'a' indicating different types of connections or weights. Several nodes are labeled 'target', suggesting specific nodes of interest or output nodes in the network.

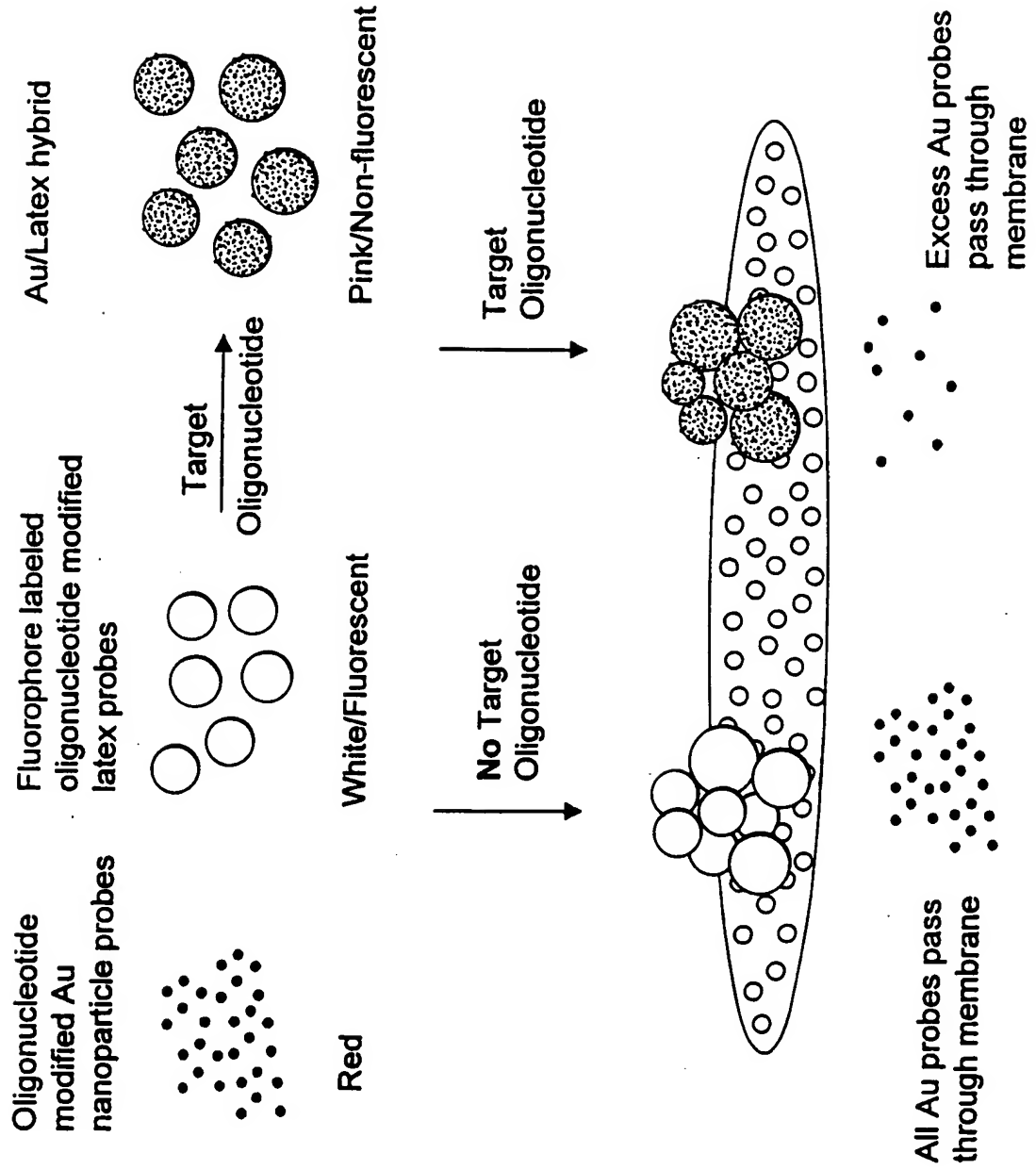
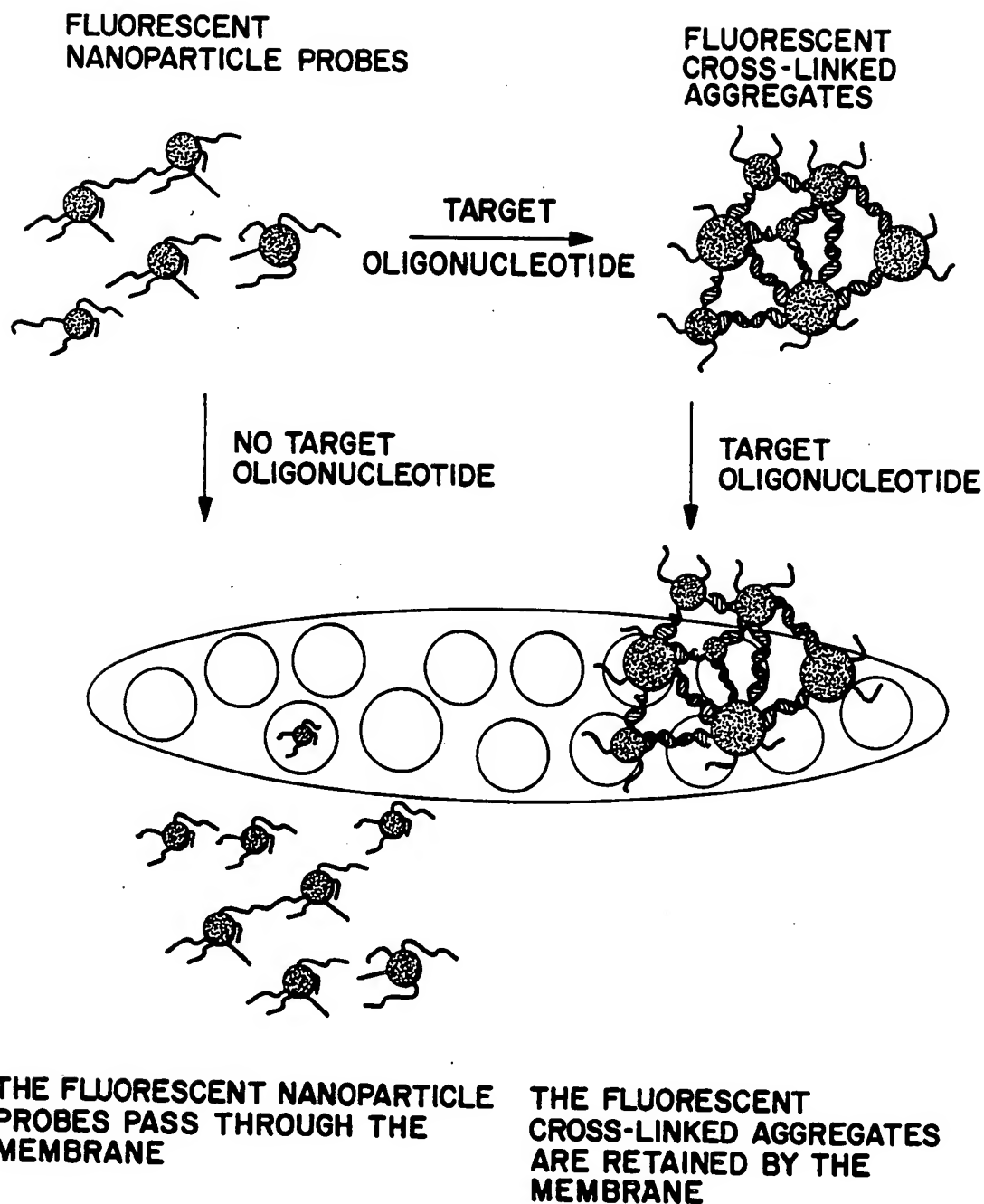


FIG. 21

FIG. 22



1006978.12001

FIG. 23

Anthrax PCR Product

5'G GCG GAT GAG TCA GTA GTT AAG GAG GCT CAT AGA GAA GTA ATT AAT
3'C CGC CTA CTC AGT CAT CAA TTC CTC CGA GTA TCT CTT CAT TAA TTA

TCG TCA ACA GAG GGA TTA TTG TTA AAT ATT GAT AAG GAT ATA AGA AAA
AGC AGT TGT CTC CCT AAT AAC AAT TTA TAA CTA TTC CTA TAT TCT TTT

ATA TTA TCC AGG GTT ATA TTG TAG AAA TTG AAG ATA CTG AAG GGC TT 3'
TAT AAT AGG TCC CAA TAT AAC ATC TTT AAC TTC TAT GAC TTC CCG AA 5'

141 mer Anthrax PCR product [SEQ ID NO:36]

3' CTC CCT AAT AAC AAT — 

[SEQ ID NO:37]

3' TTA TAA CTA TTC CTA — 

[SEQ ID NO:38]

Oligonucleotide-Nanoparticle Probes

Blocker Oligonucleotides

3' C CGC CTA CTC AGT CAT CAA TTC CTC CGA GT

[SEQ ID NO:39]

3' A TCT CTT CAT TAA TTA AGC AGT TGT

[SEQ ID NO:40]

3' TAT TCT TTT TAT AAT AGG TCC CAA TAT

[SEQ ID NO:41]

3' AAC ATC TTT AAC TTC TAT GAC TTC CCG AA

[SEQ ID NO:42]

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FIG. 24

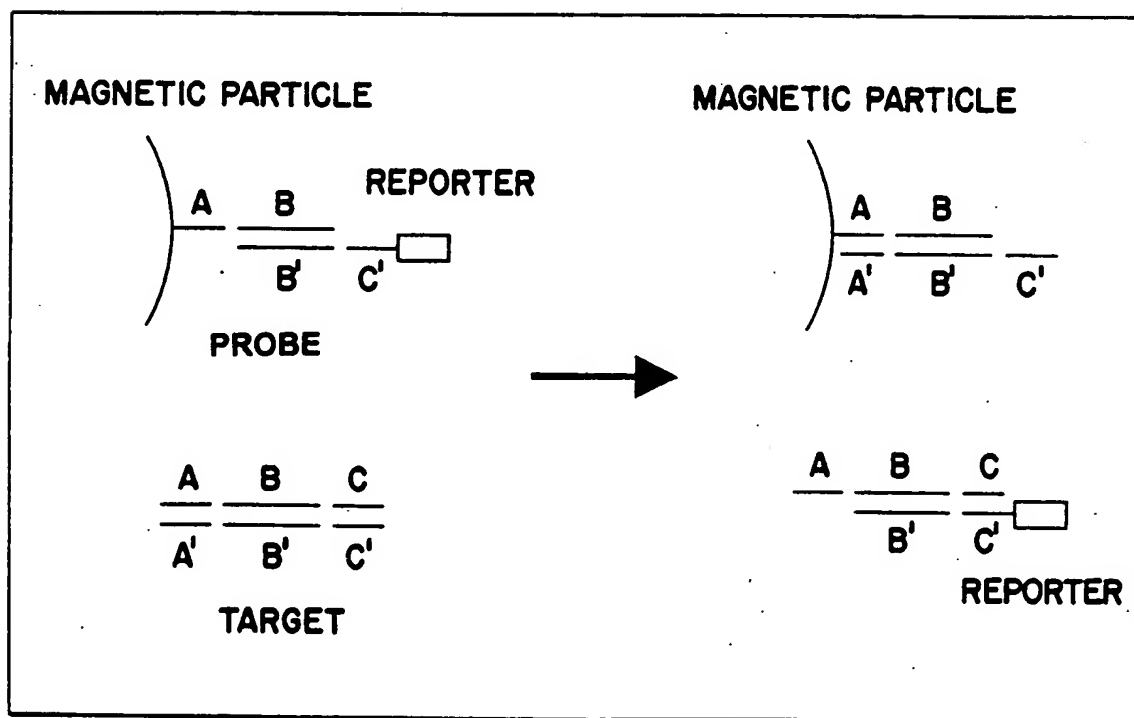
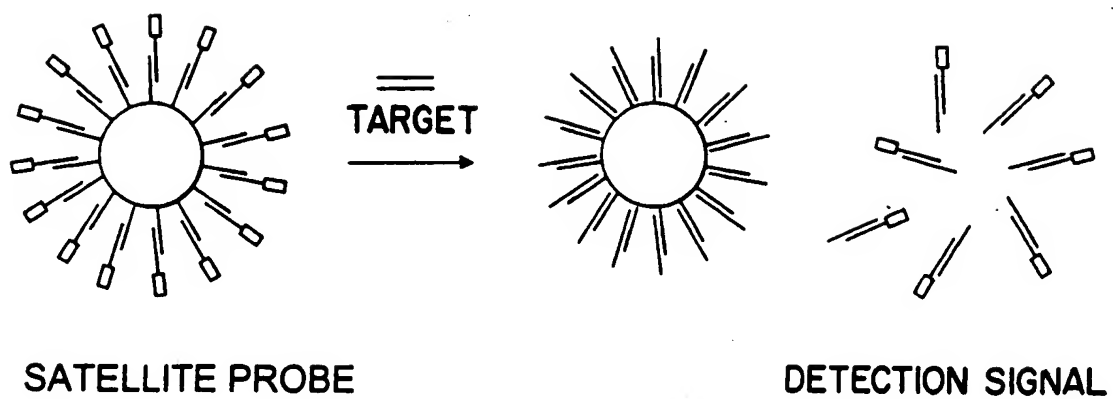


FIG. 25A

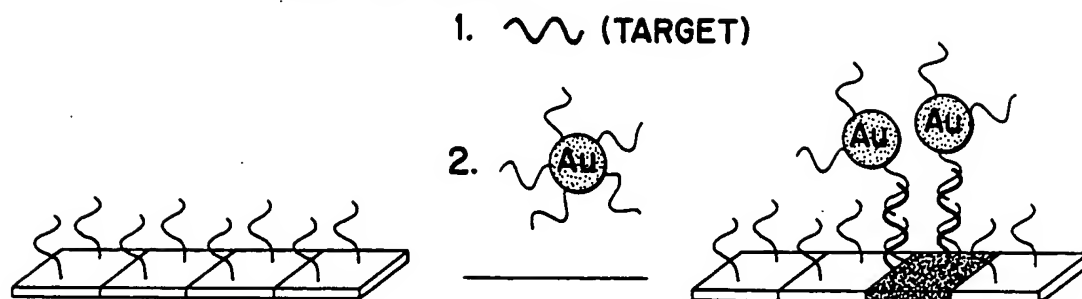


FIG. 25B

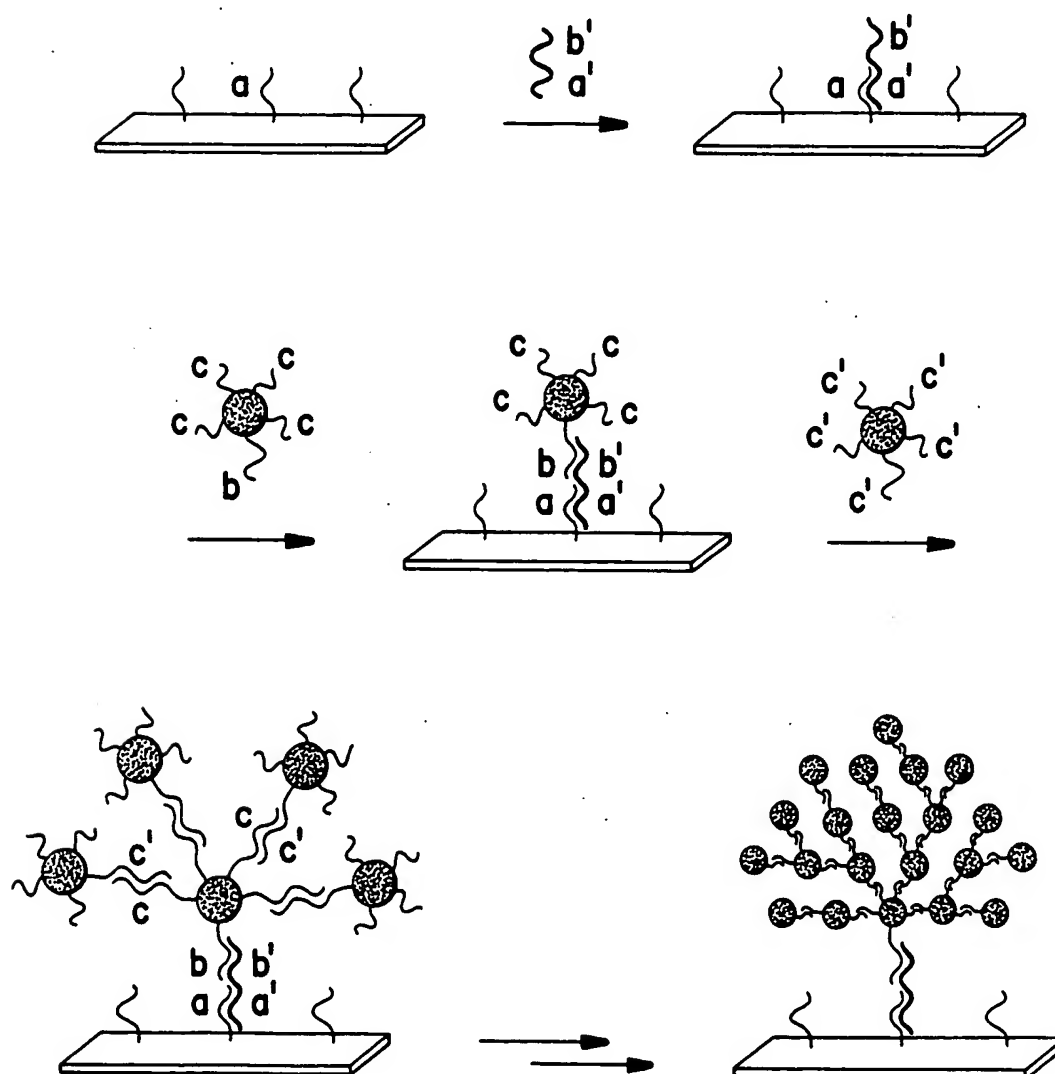


FIG. 26A

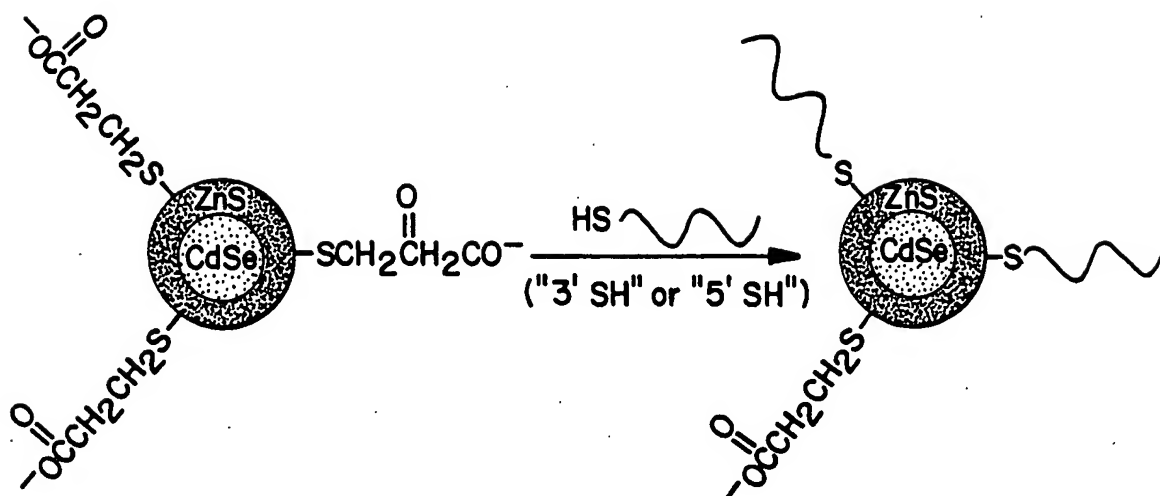


FIG. 26B

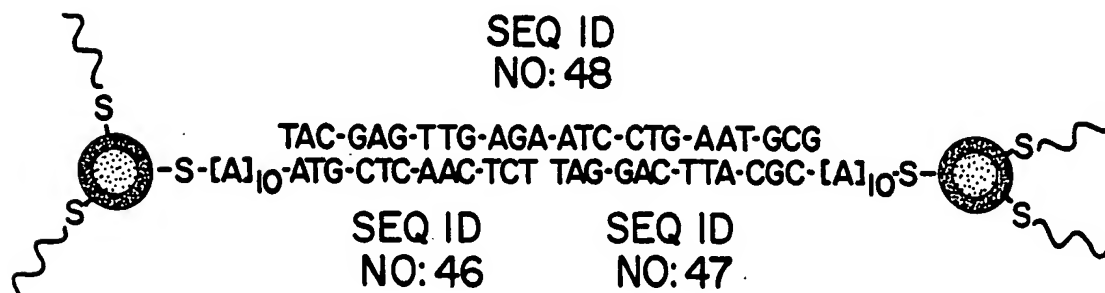


FIG. 27A

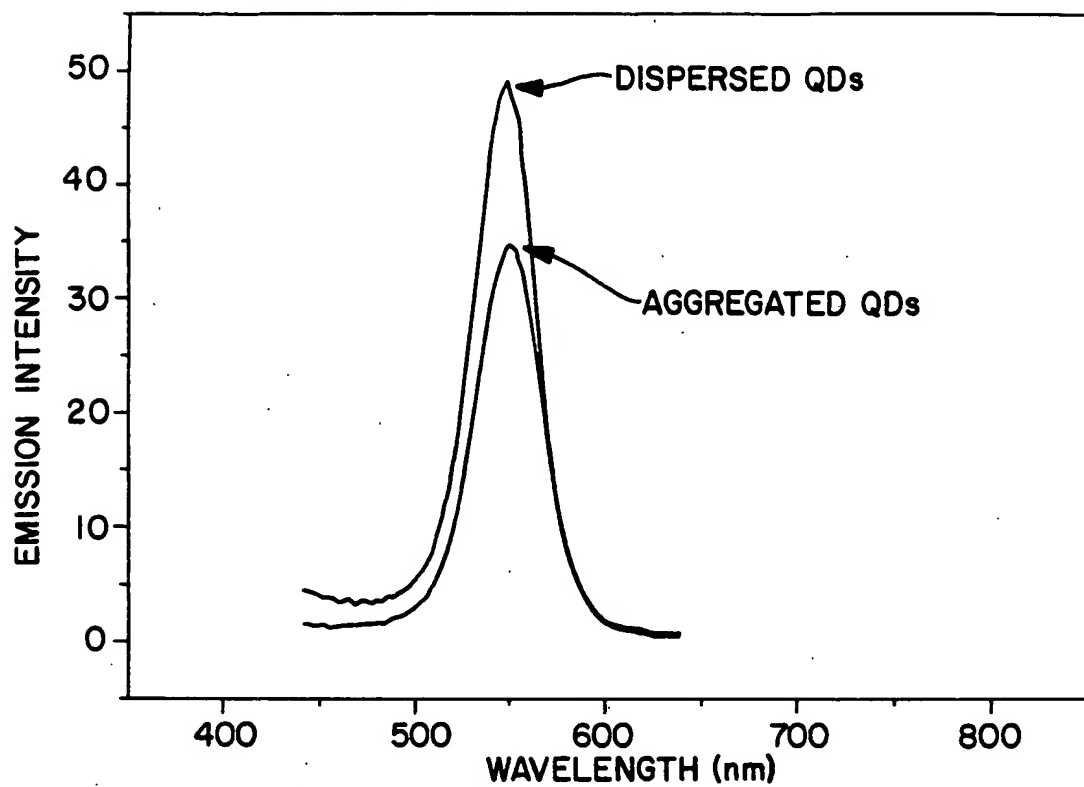


FIG. 27B

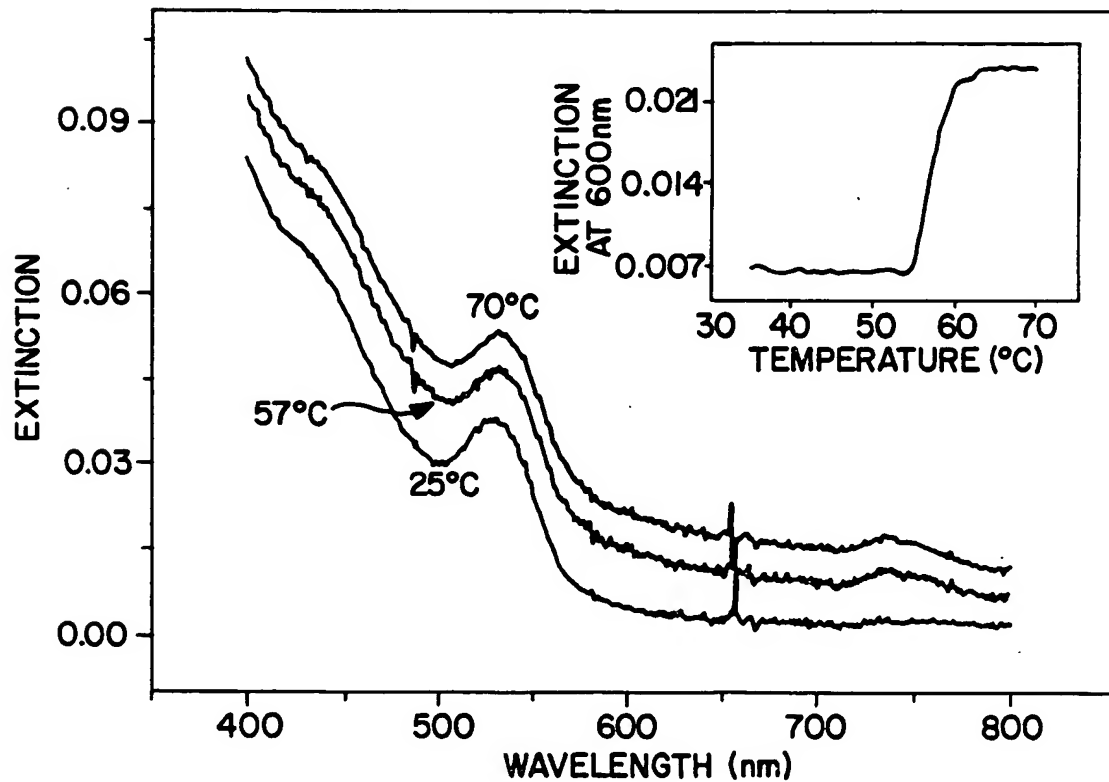


FIG. 27C

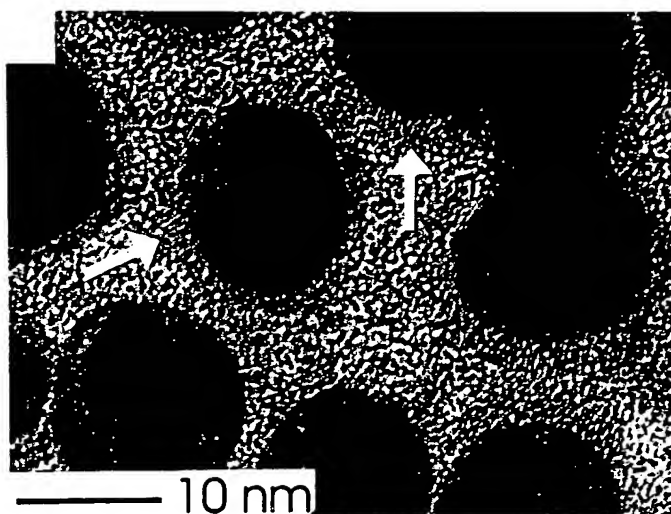


FIG. 27D

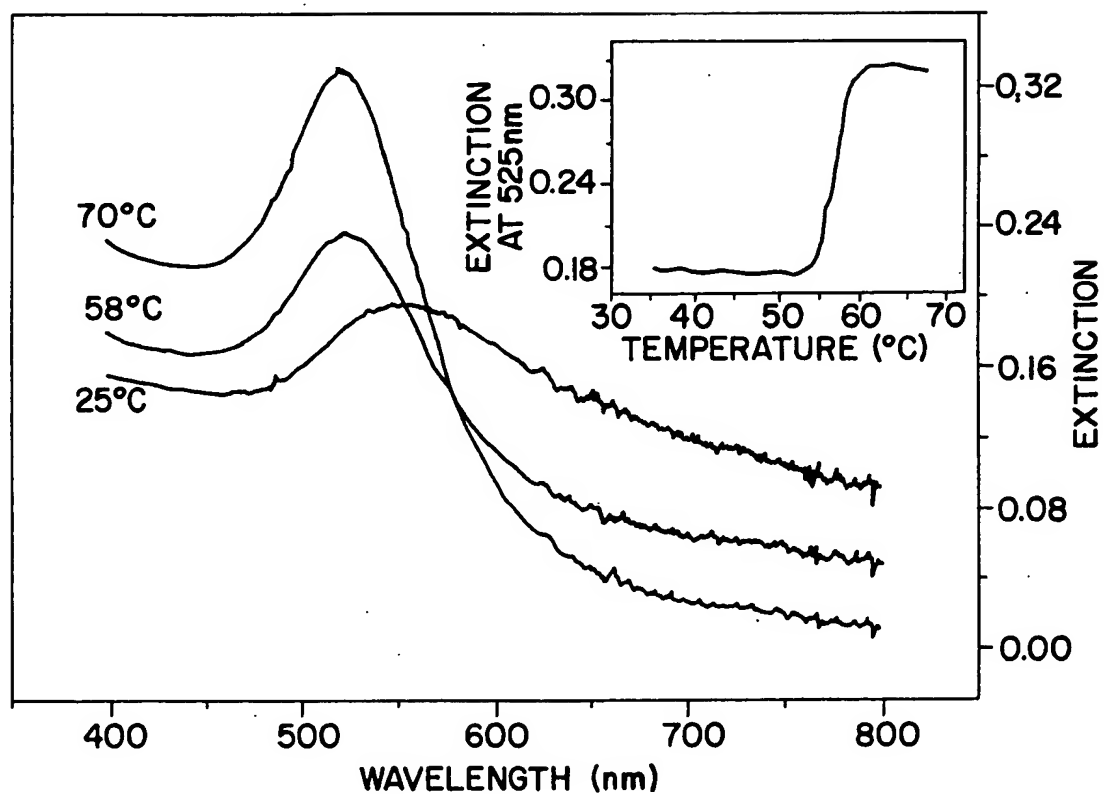


FIG. 28B

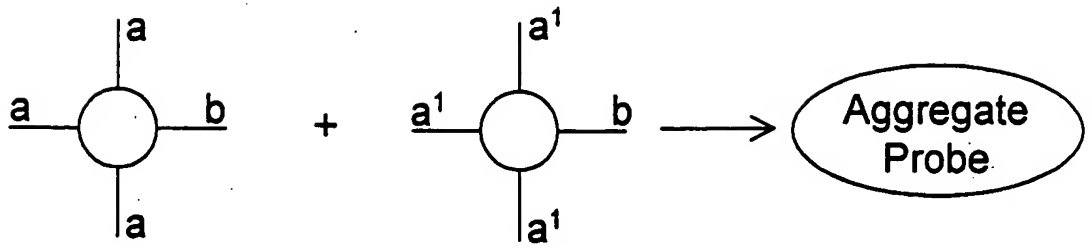


FIG. 28C

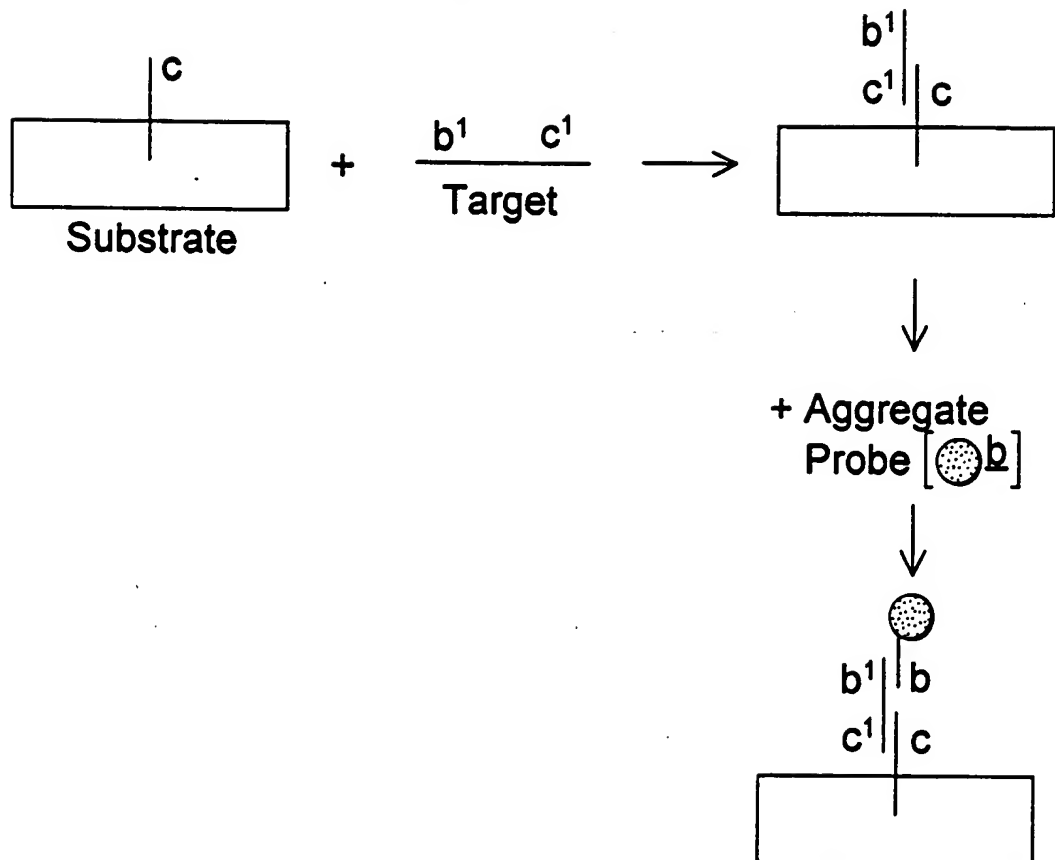


FIG. 28D

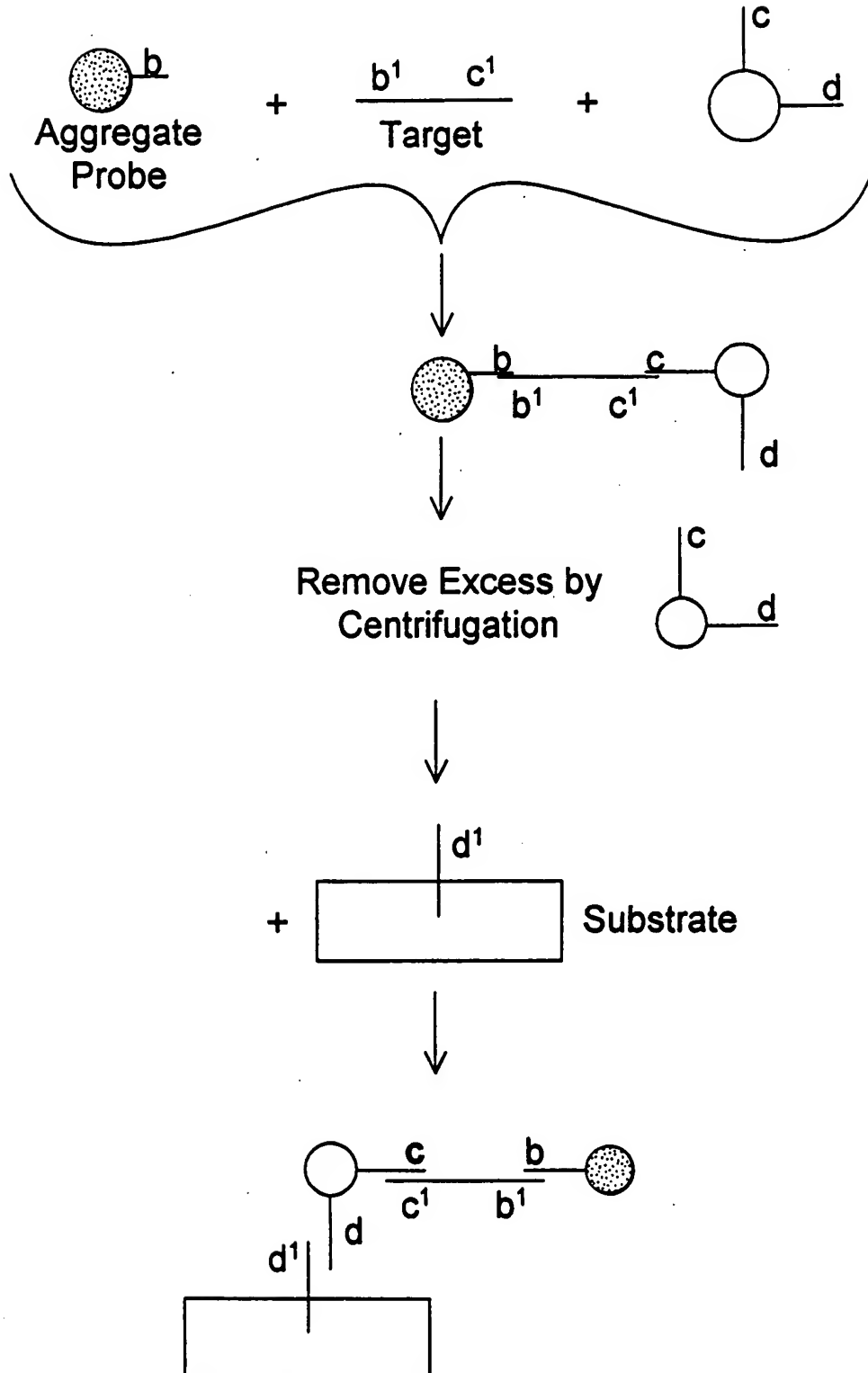
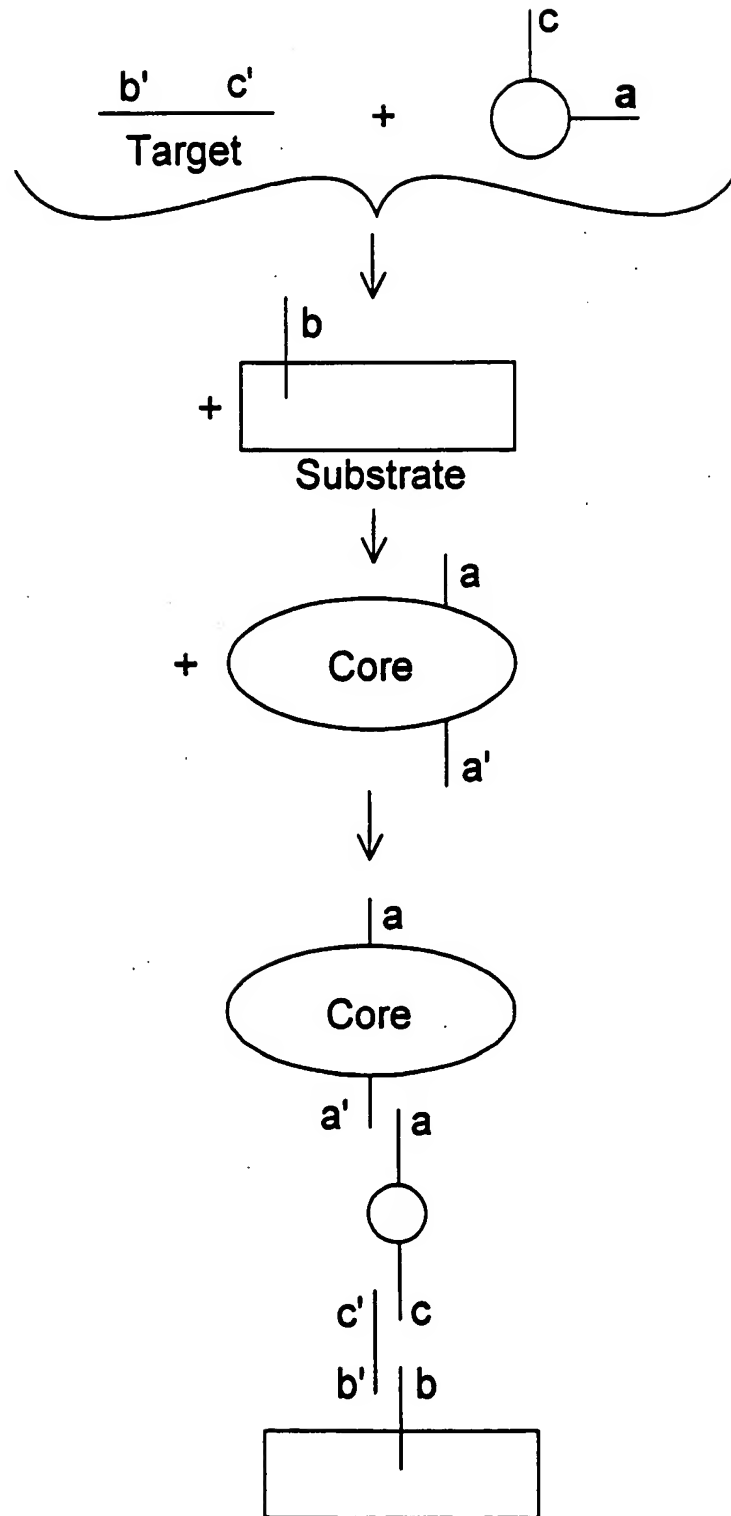
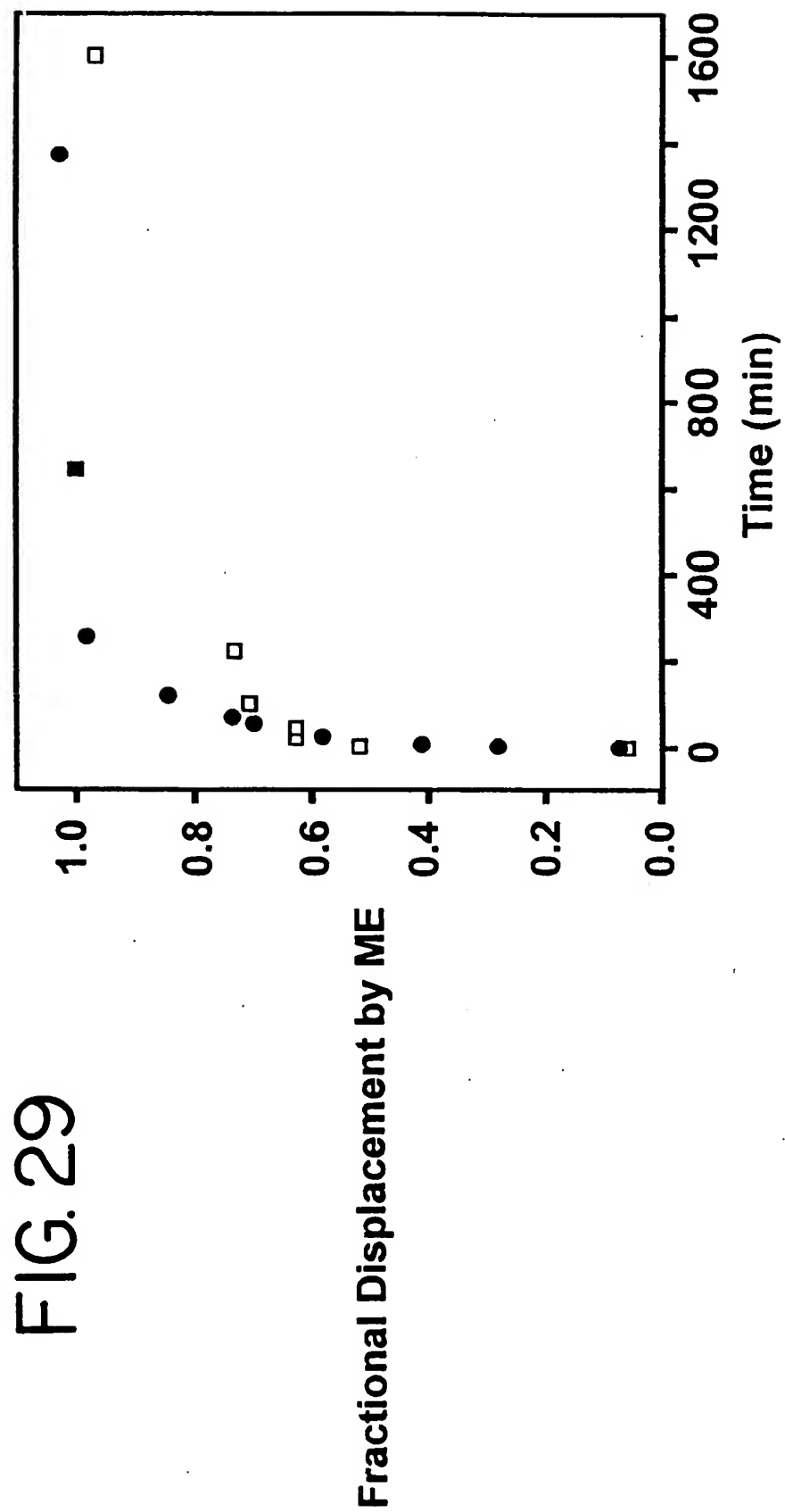


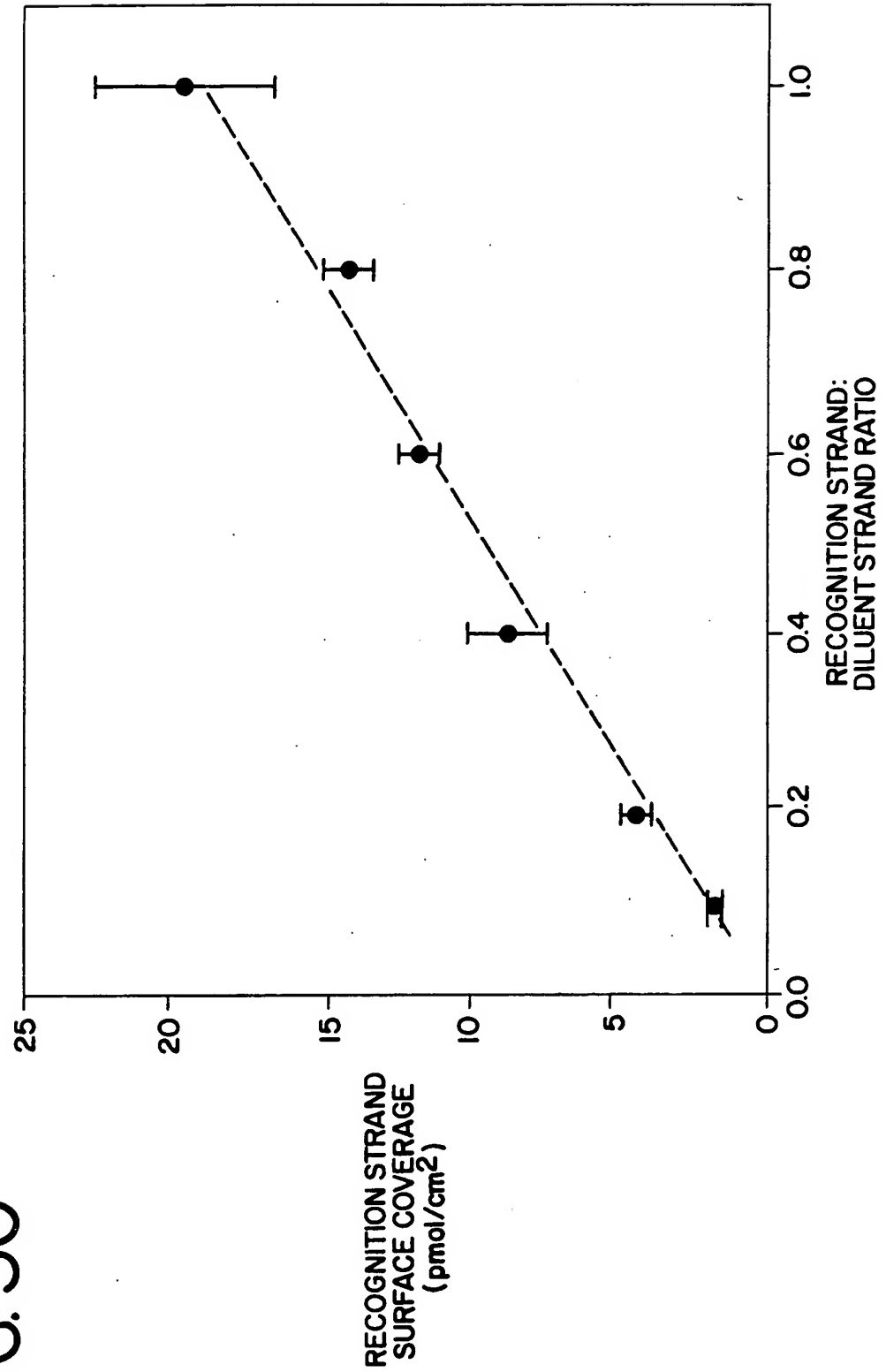
FIG. 28E





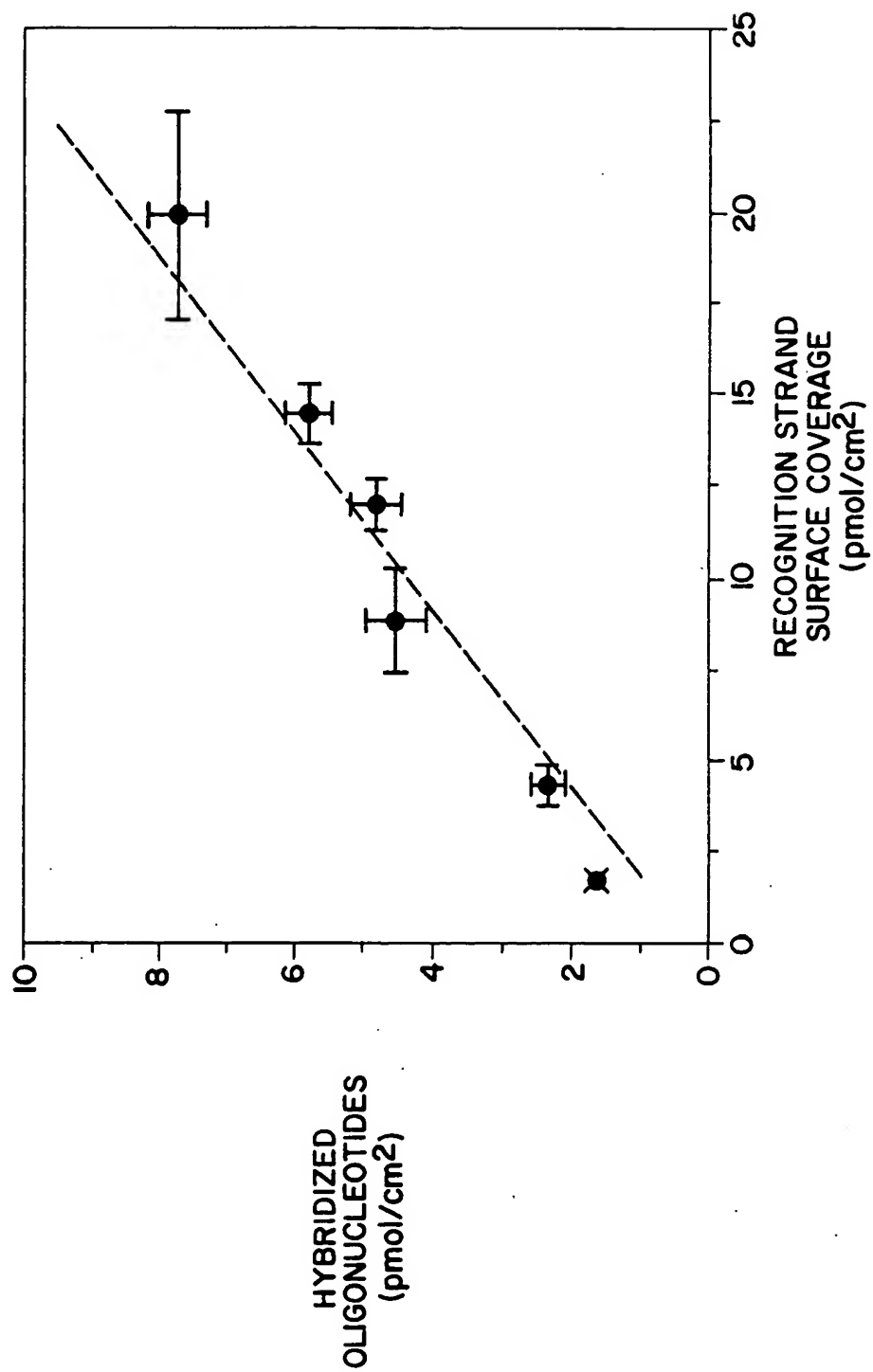
10/02/82 08:00

FIG. 30



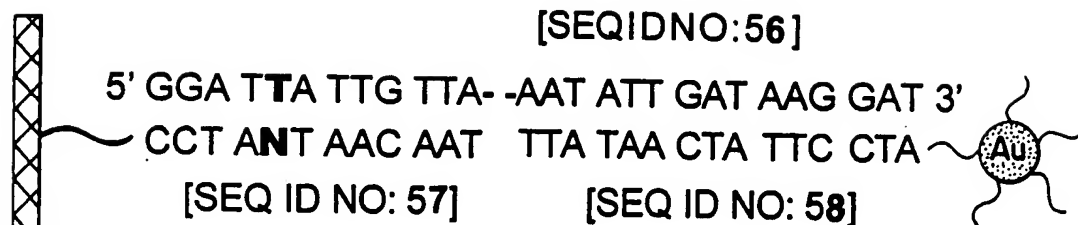
T0021-82680001

FIG. 31

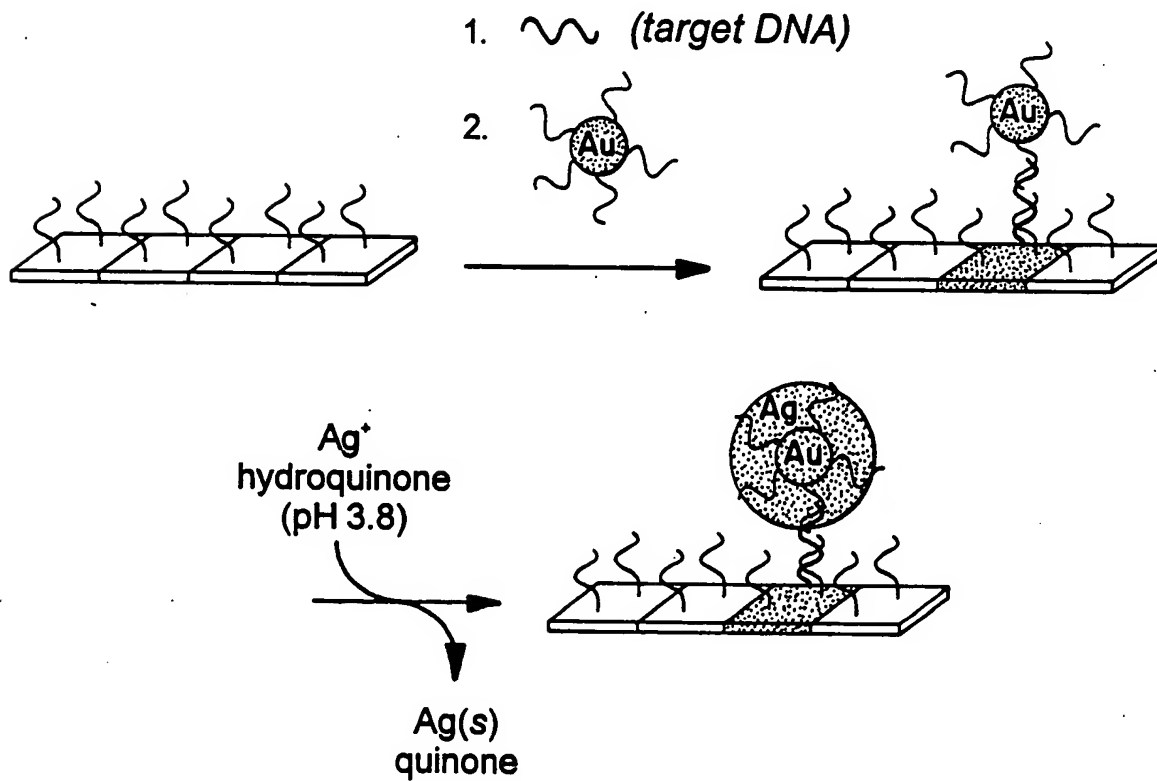


T02021-B2680001

FIG. 32



N = A (complementary),
 G,C,T (mismatched)



[illegible]

1

G

T0202T-B268000T

FIG. 34

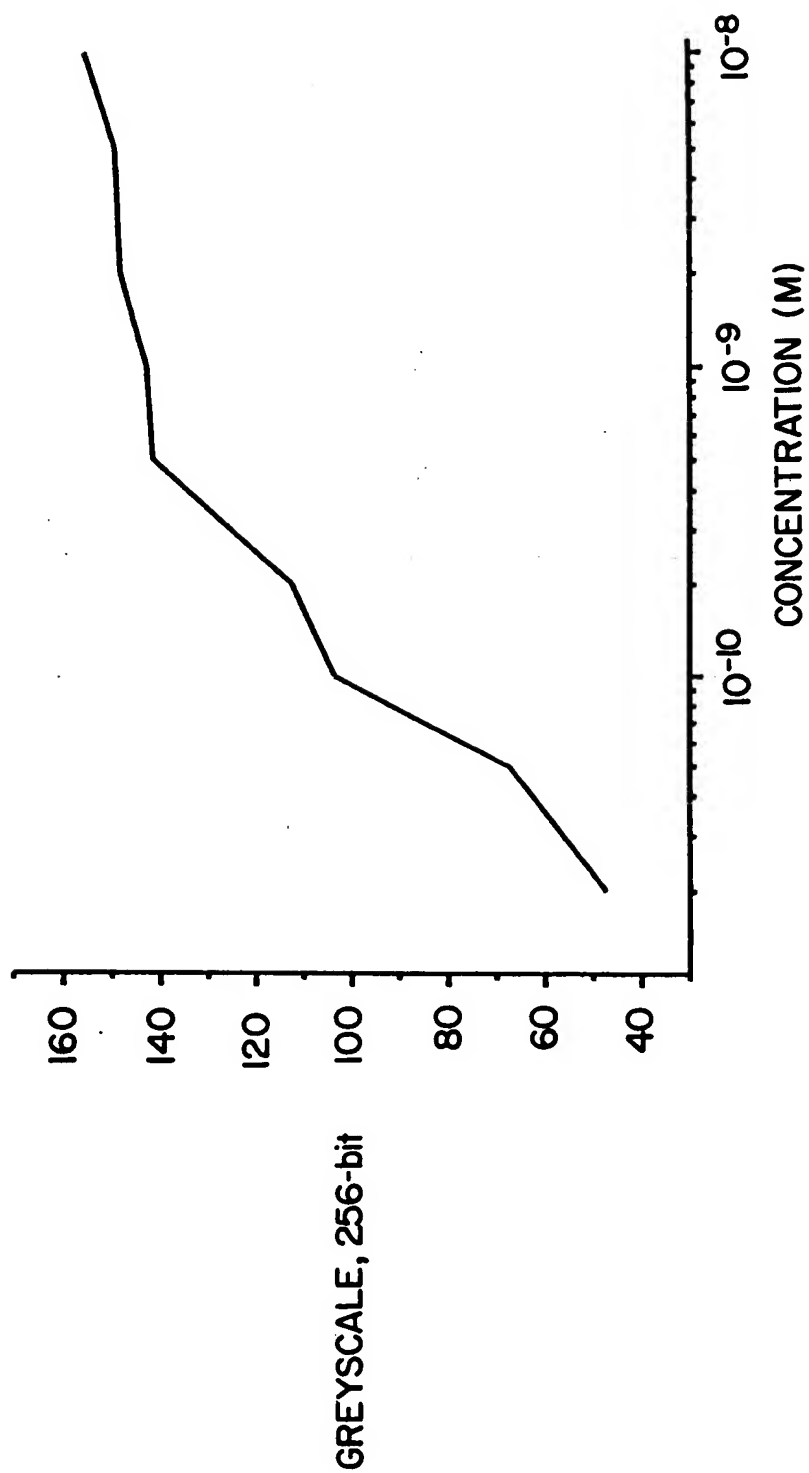


FIG.35A

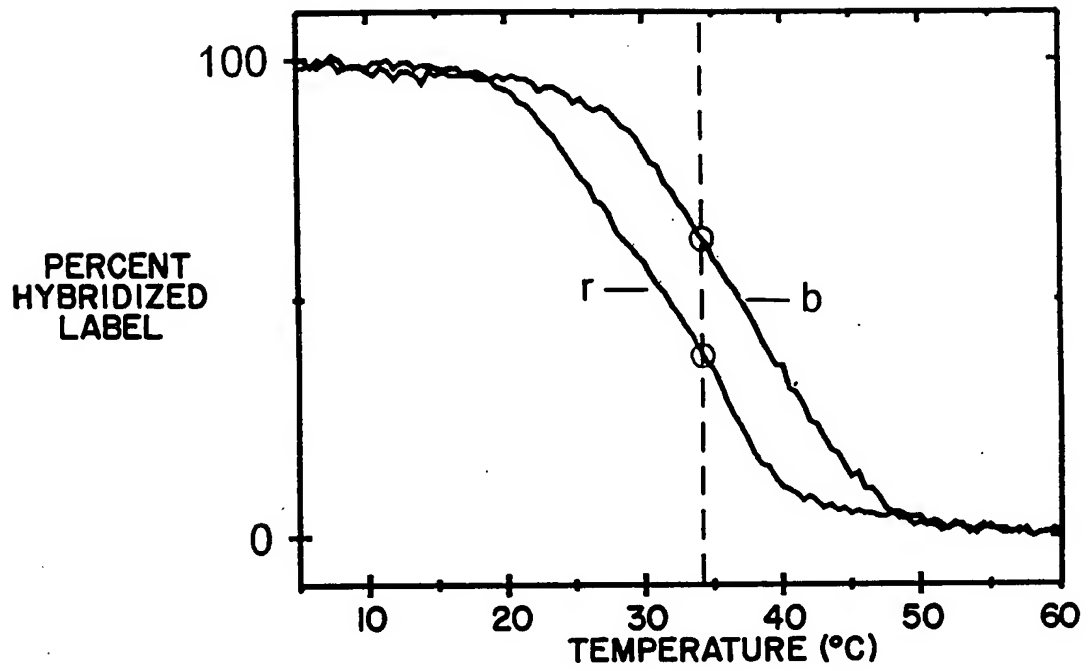


FIG.35B

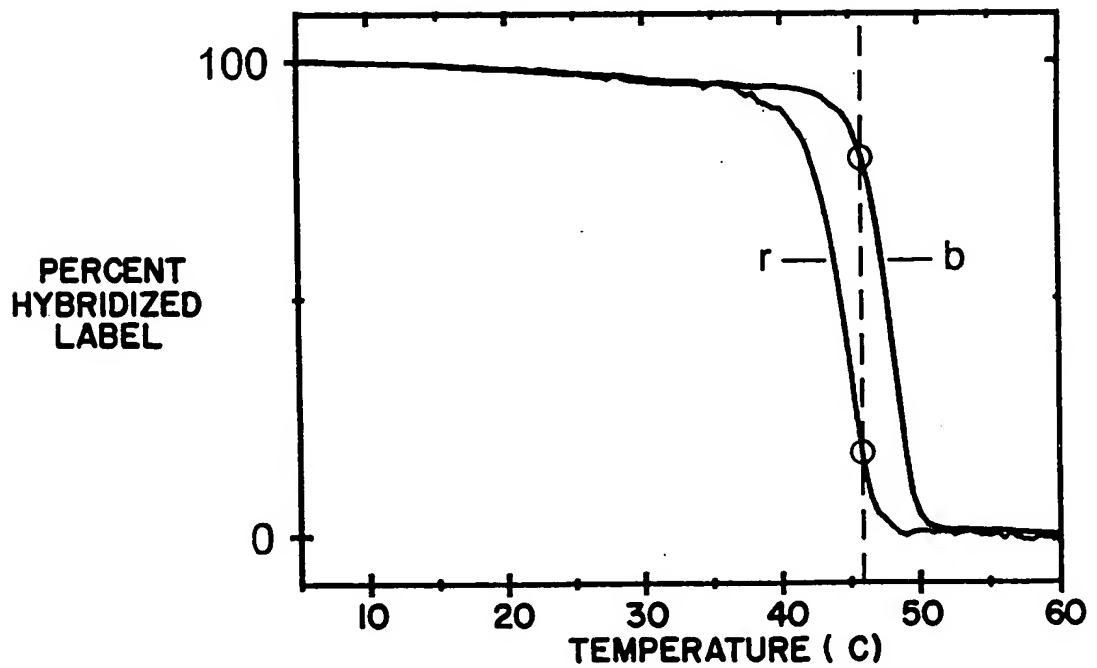
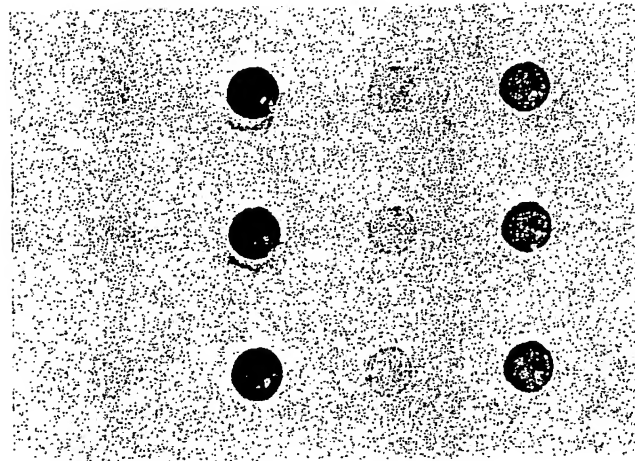
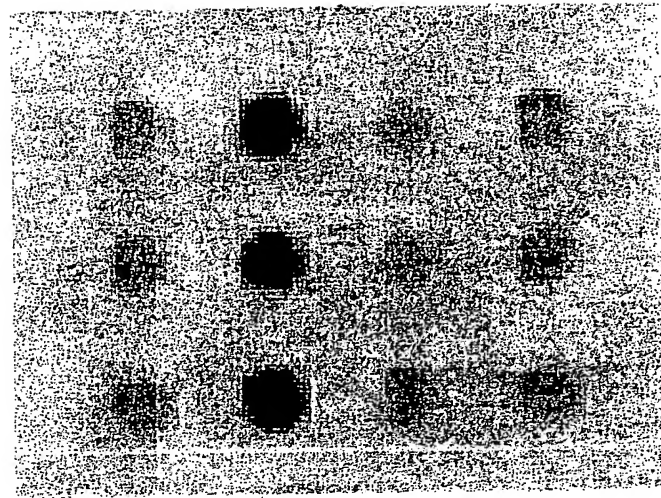


FIG. 36B



C A T G

FIG.37A

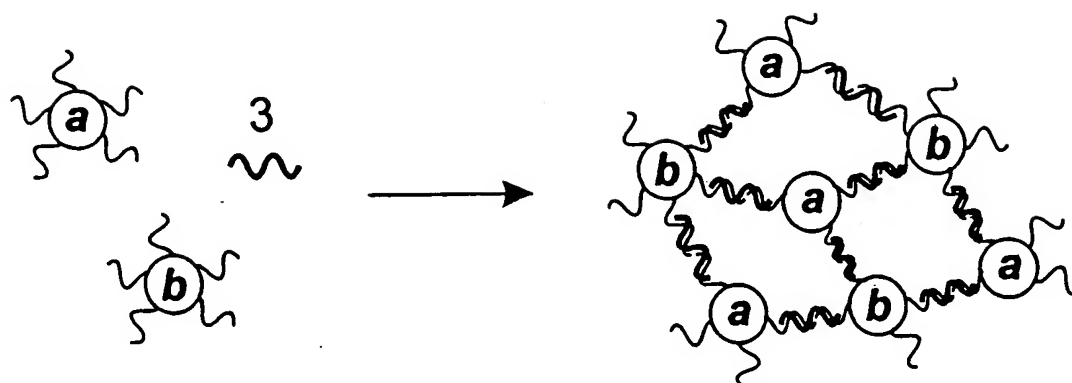
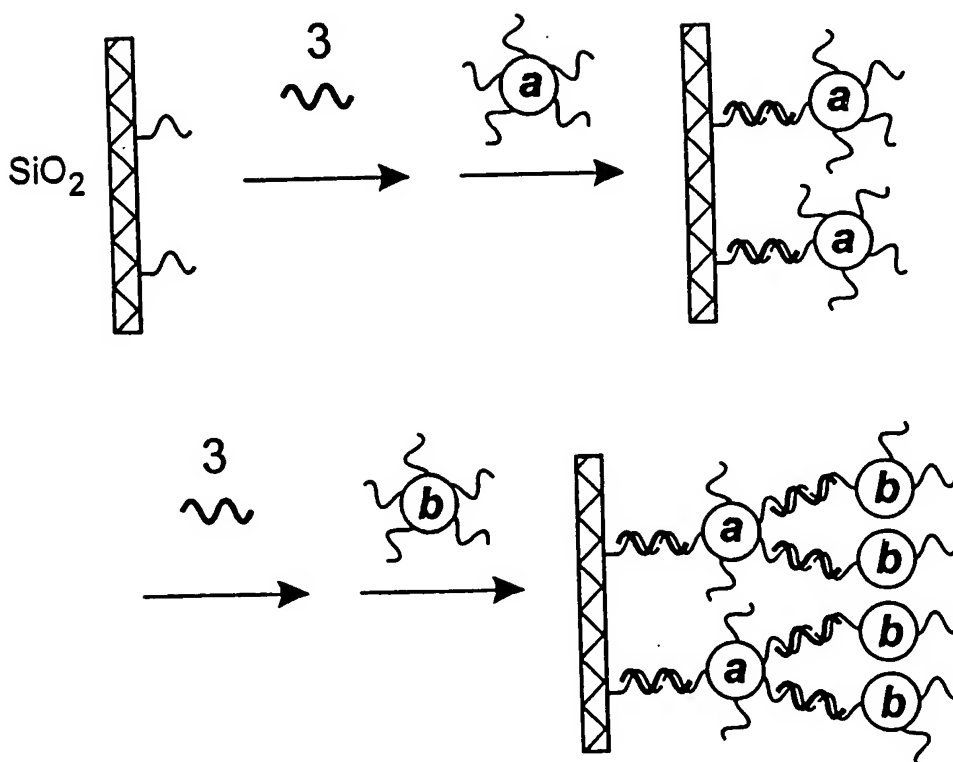


FIG.37B



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FIG.38A

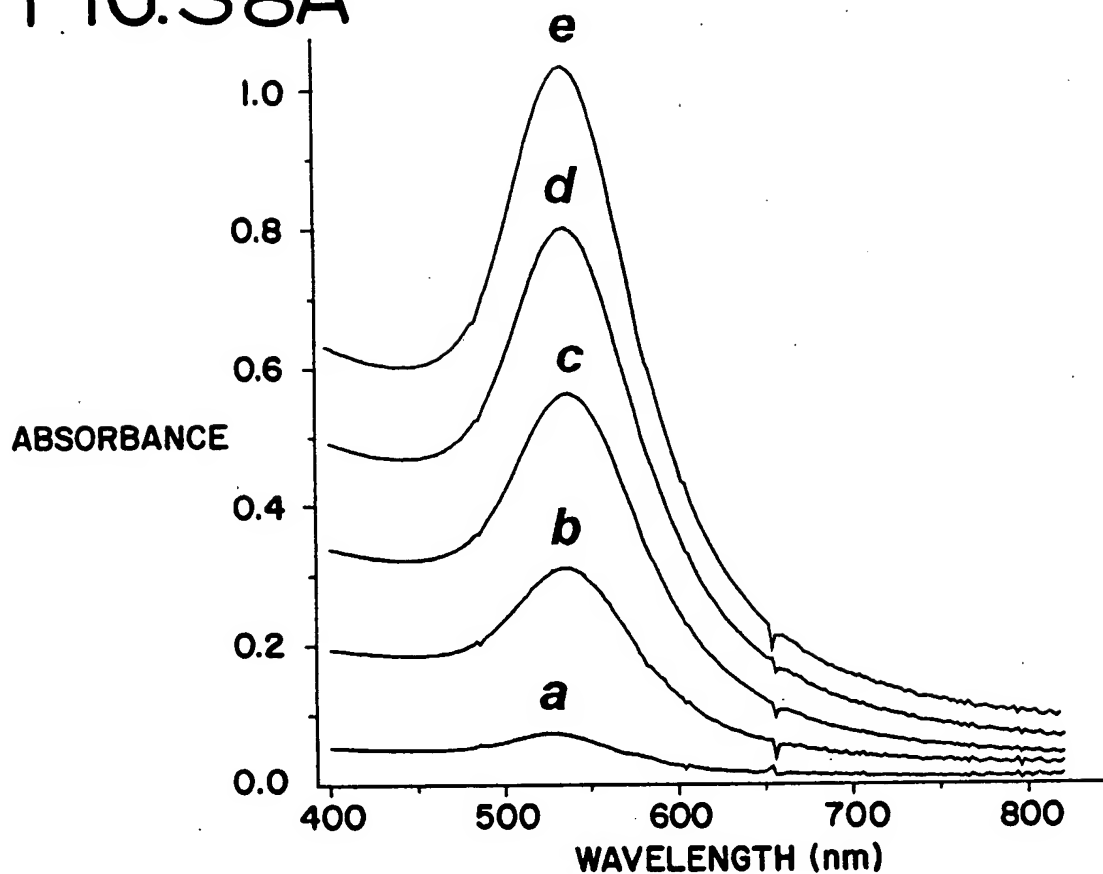


FIG.38B

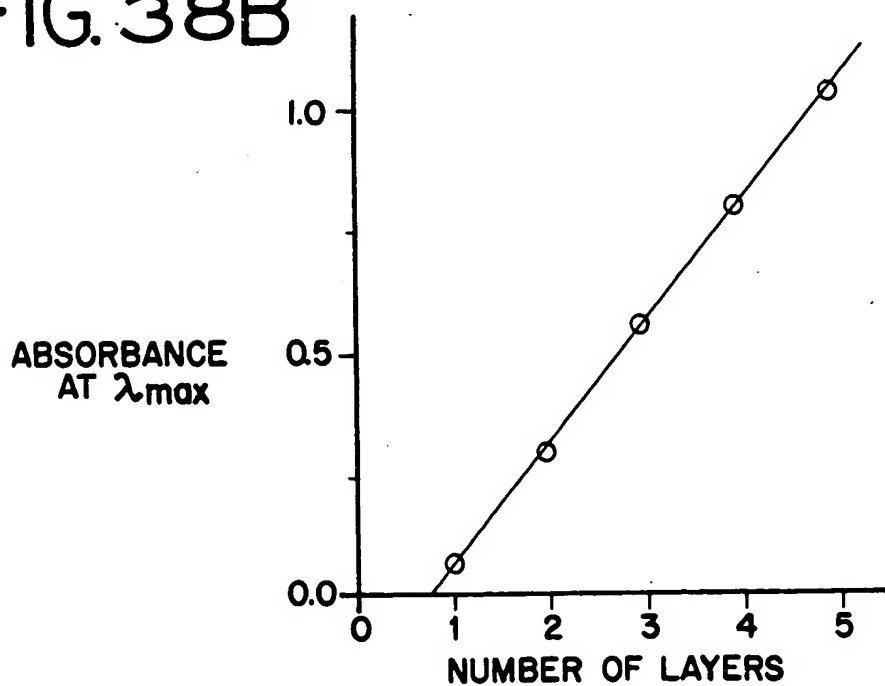


FIG. 39A

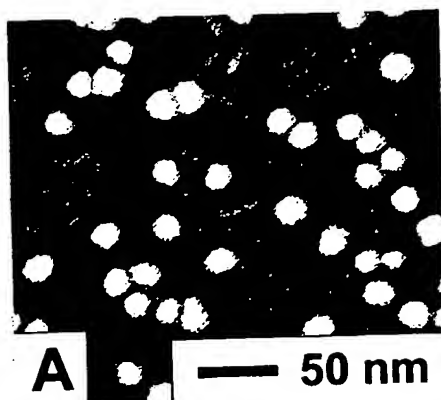
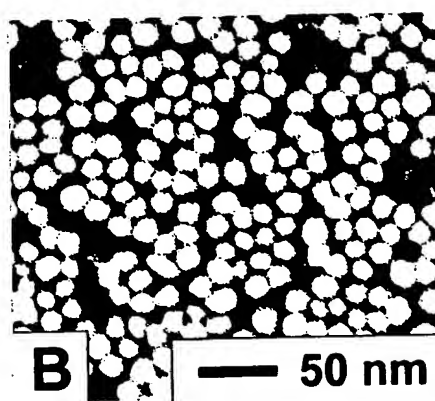


FIG. 39B



10008978-120701

FIG.39C

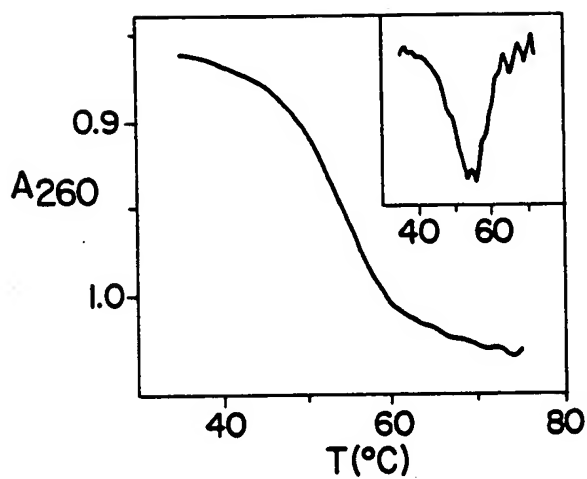


FIG.39D

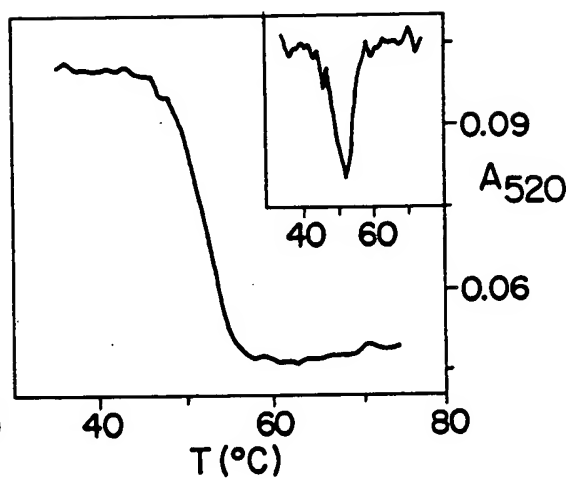


FIG.39E

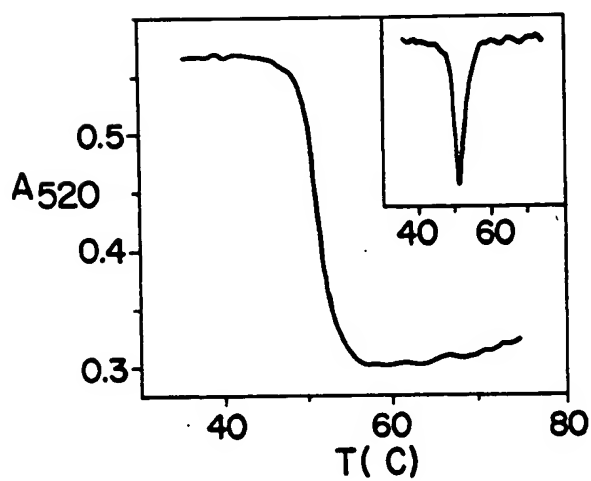


FIG.39F

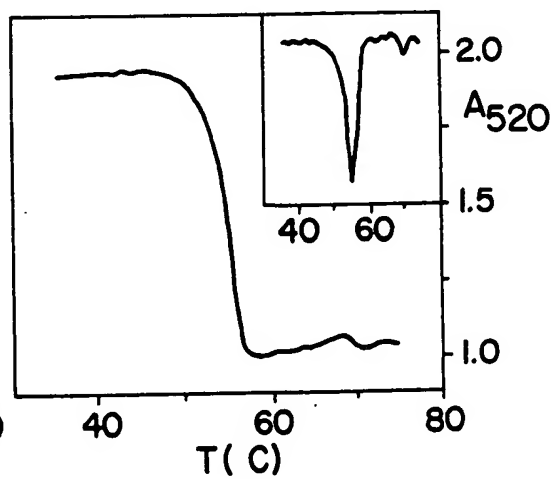


FIG. 40

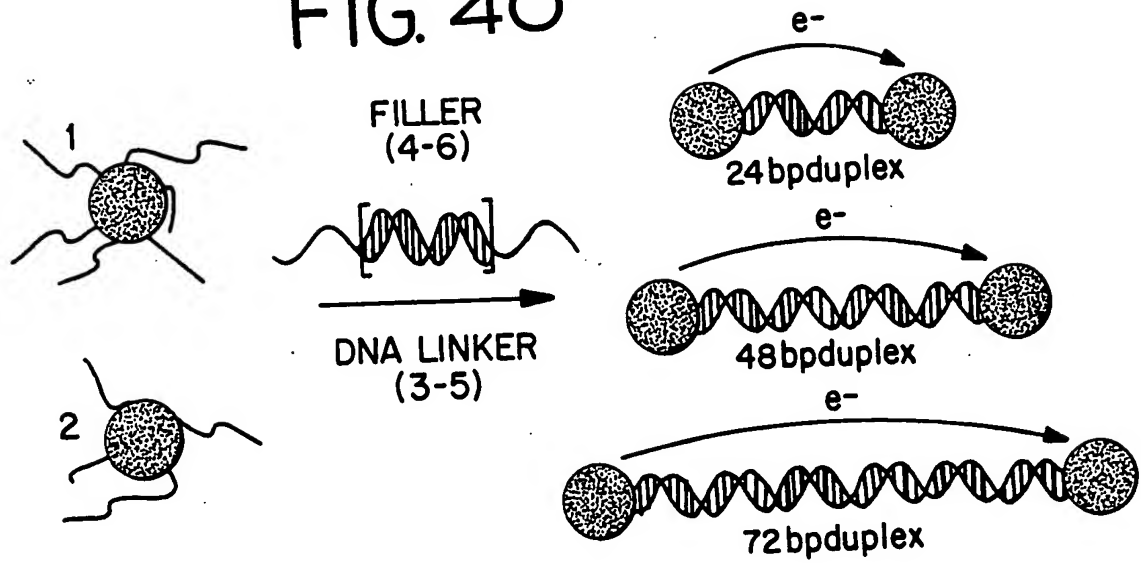


FIG. 41

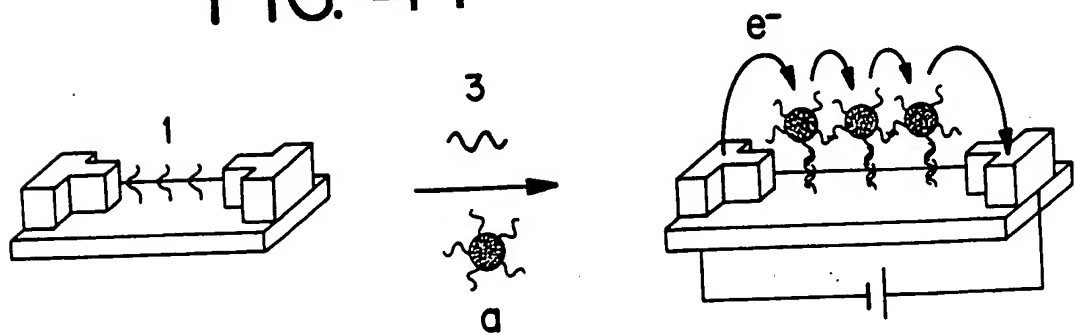
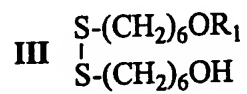
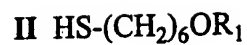
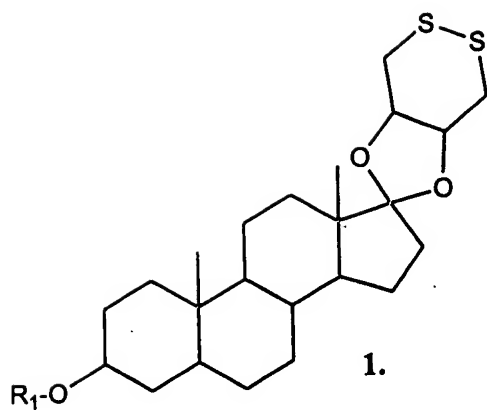


FIG. 42



R₁

a = H

b = (iPr)₂NP(OCH₂CH₂CN)-

c1 = 5'-p(A₂₀)-TATCGTTCCATCAGCT [SEQ ID NO: 65]

c2 = 5'-p(A₂₀)-TTGATCTTCCGTTCT [SEQ ID NO: 66]

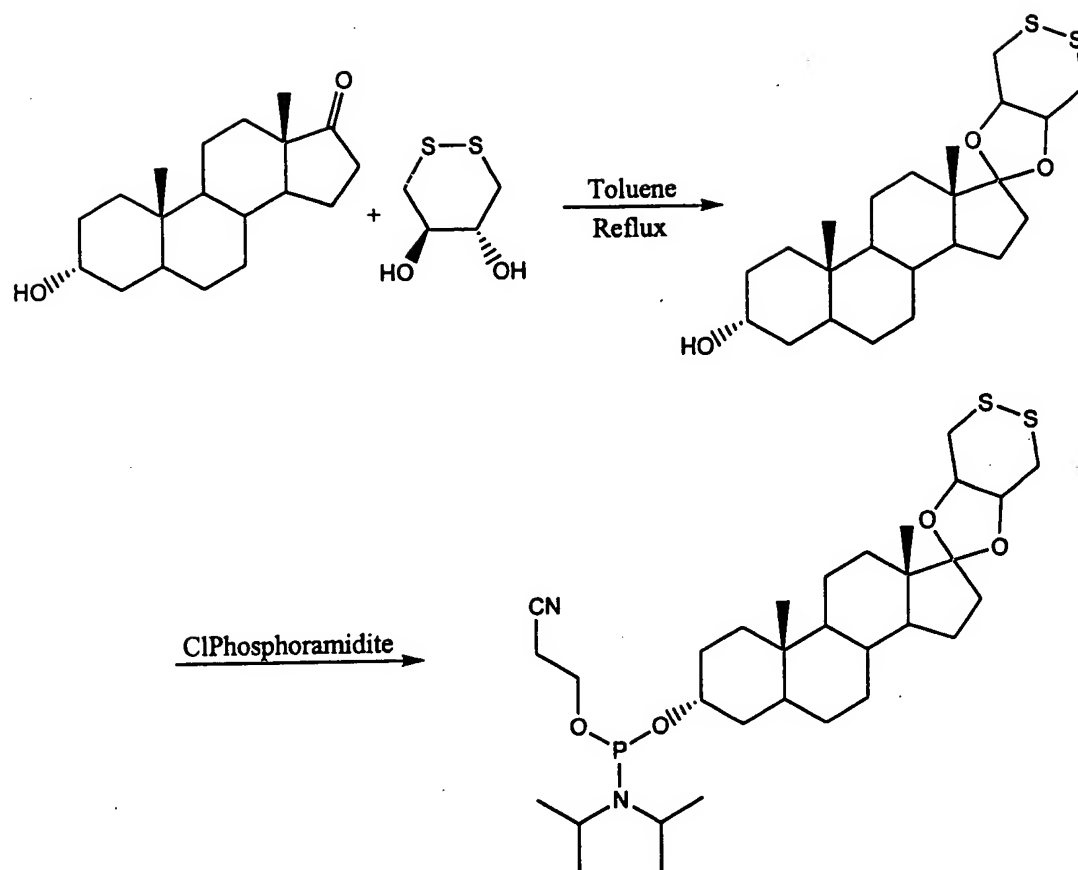
Target I = 79-mer oligonucleotide with target region:

3'-.....ATAGCAAGGTAGTCGAGCAACTAGAAAGGCAAGA.....5'
[SEQ ID NO: 67]

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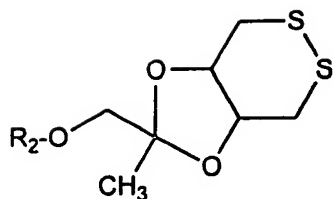
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FIG. 43



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FIG. 44



2.

 R_2

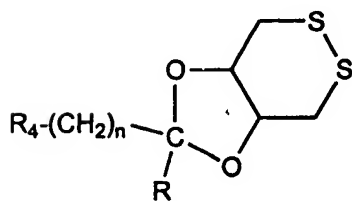
a = H

b = (iPr)₂NP(OCH₂CH₂CN)-c1 = 5'-p(A₂₀)-GCAGACCTCA [SEQ ID NO: 68]c2 = 5'-p(A₂₀)-CCTATGTGTCG [SEQ ID NO: 69]D = 5'-p(A₂₀) [SEQ ID NO: 70]

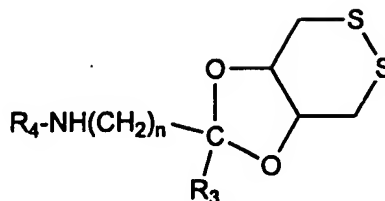
Target I = 63-mer oligonucleotide with target region:

3'-.....CGTCTGGAGTGGATACACAGC.....5'

[SEQ ID NO: 71]



3.



4.

 R_3 = hydrogen, an alkyl group, an aryl group, or a substituted alkyl or aryl group R_4 = an attached oligonucleotide or modified oligonucleotide

1000693-100701

FIG. 45

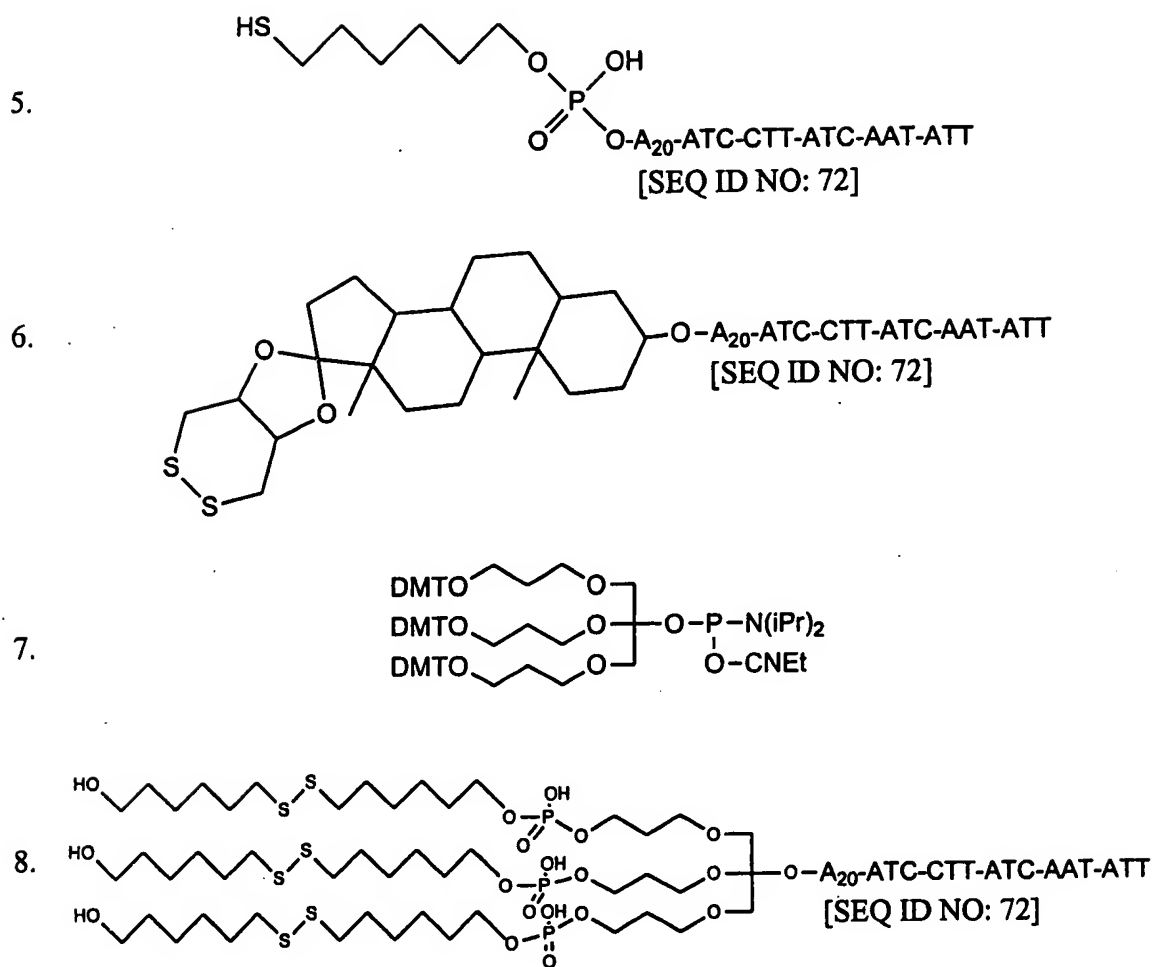
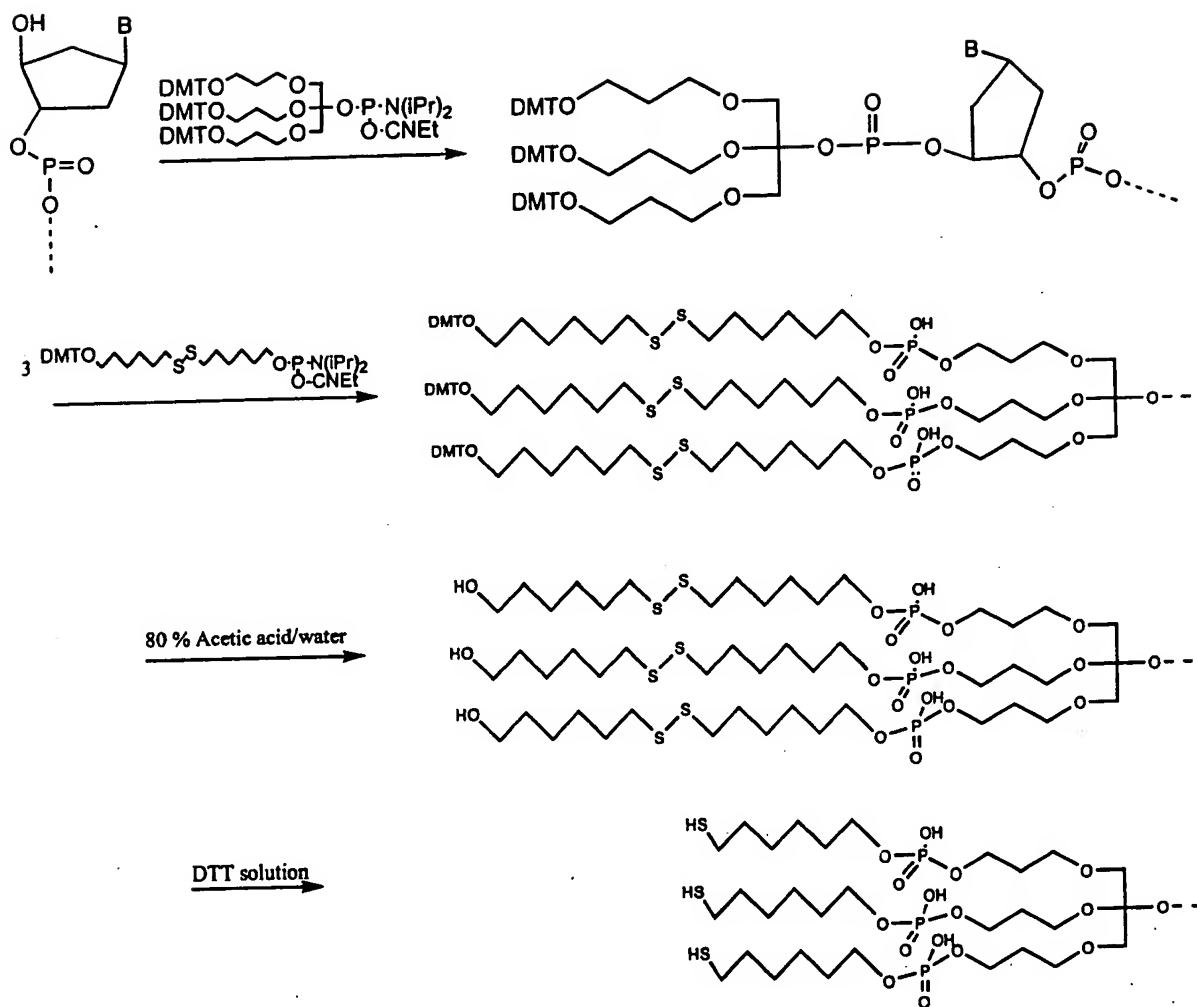


FIG. 46



100097-120701

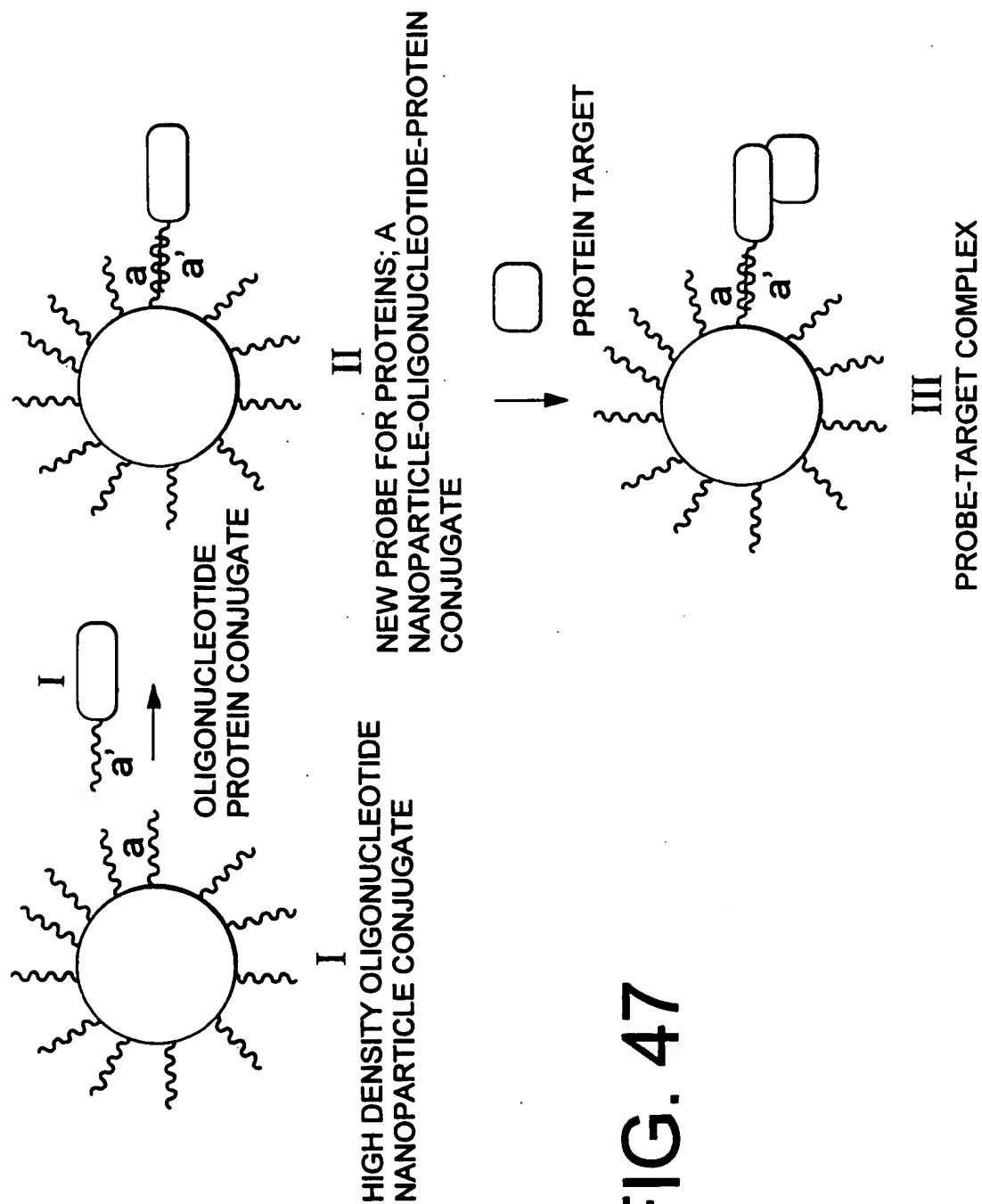
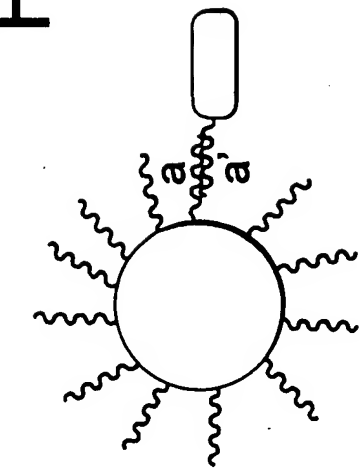


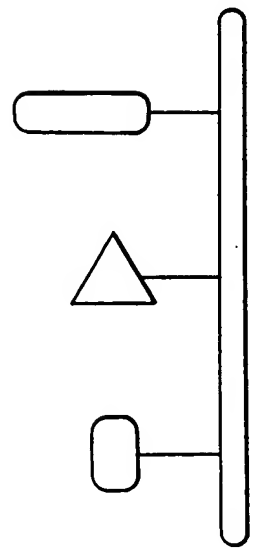
FIG. 47

FIG. 48



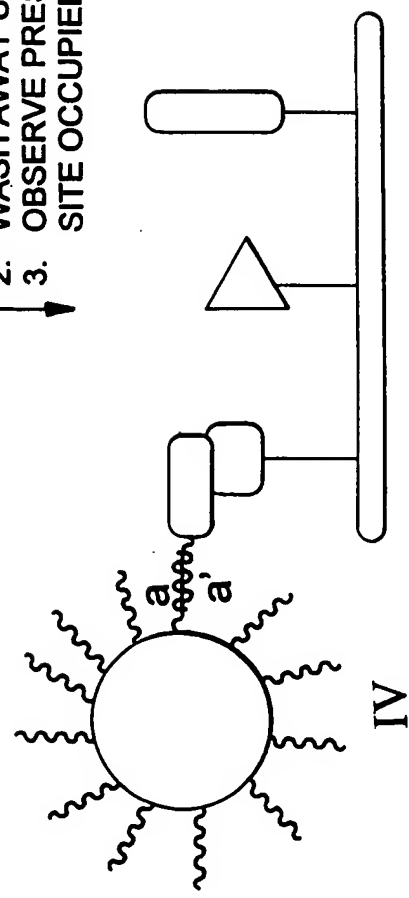
II

NEW PROBE FOR PROTEINS; A
NANOPARTICLE-OLIGONUCLEOTIDE-PROTEIN
CONJUGATE



GLASS PLATE WITH THREE DIFFERENT PROTEINS
IMMOBILIZED ON THE SURFACE, ONE OF WHICH
BINDS TO THE PROTEIN IN PROBE II

1. EXPOSE PLATE TO THE PROBE SOLUTION
2. WASH AWAY UNBOUND NANOPARTICLE PROBE
3. OBSERVE PRESENCE OF BOUND NANOPARTICLES AT
SITE OCCUPIED BY THE FIRST PROTEIN IN THE SERIES.



IV

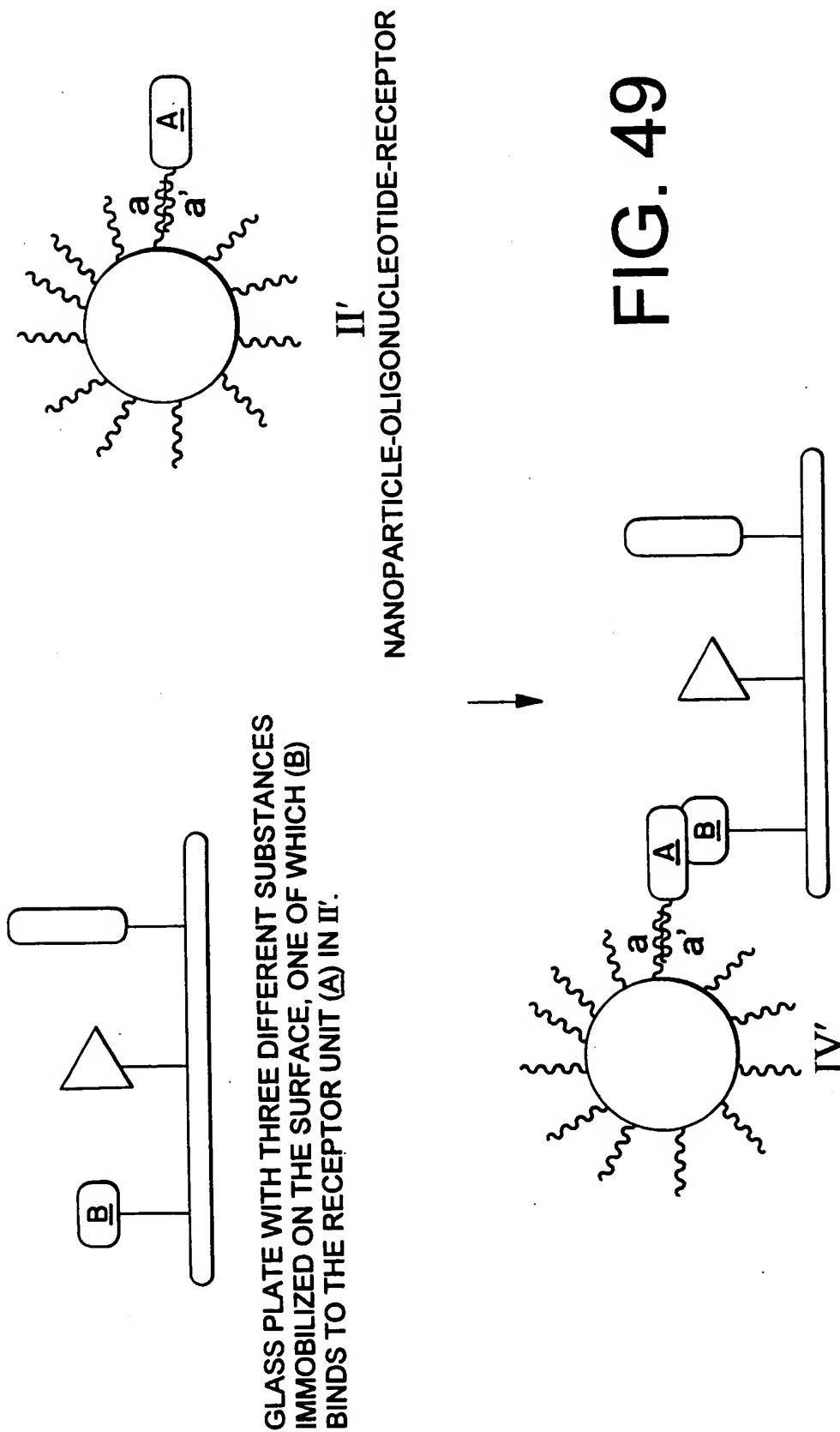


FIG. 50A

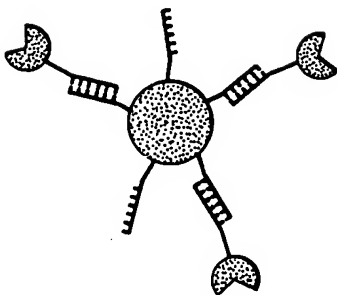


FIG. 50B

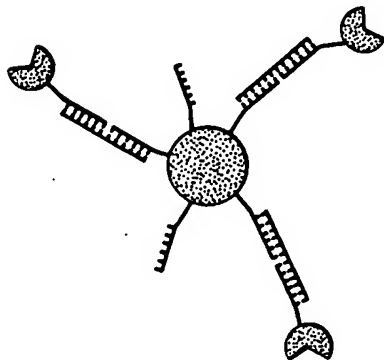


FIG. 51A

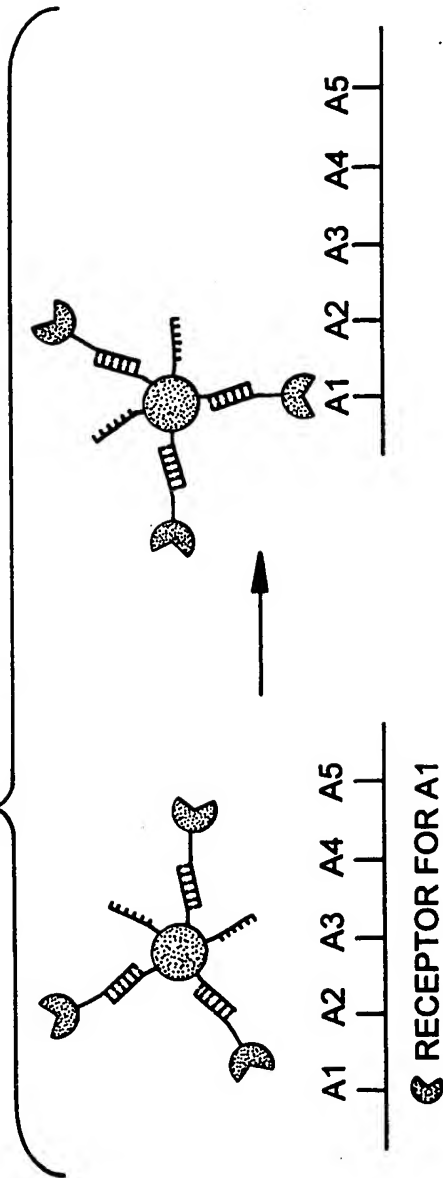


FIG. 51B

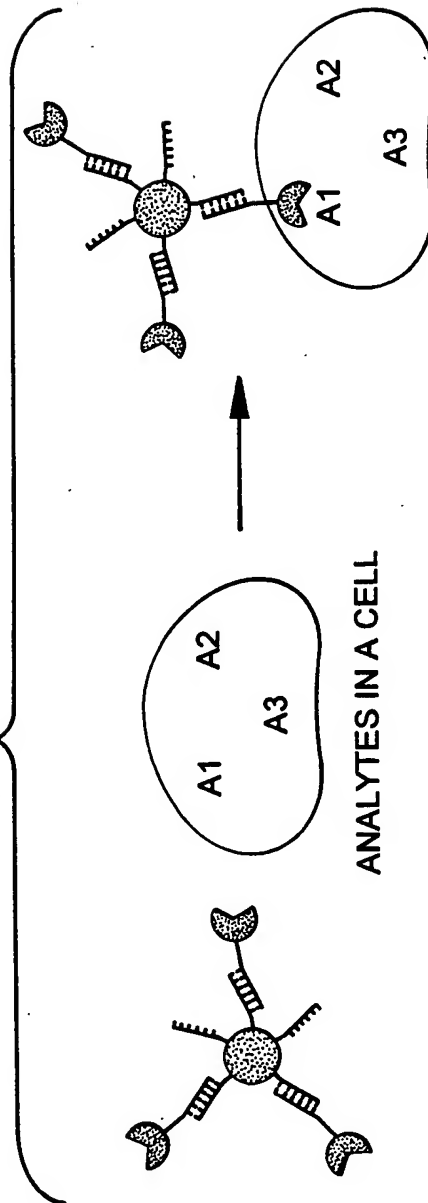
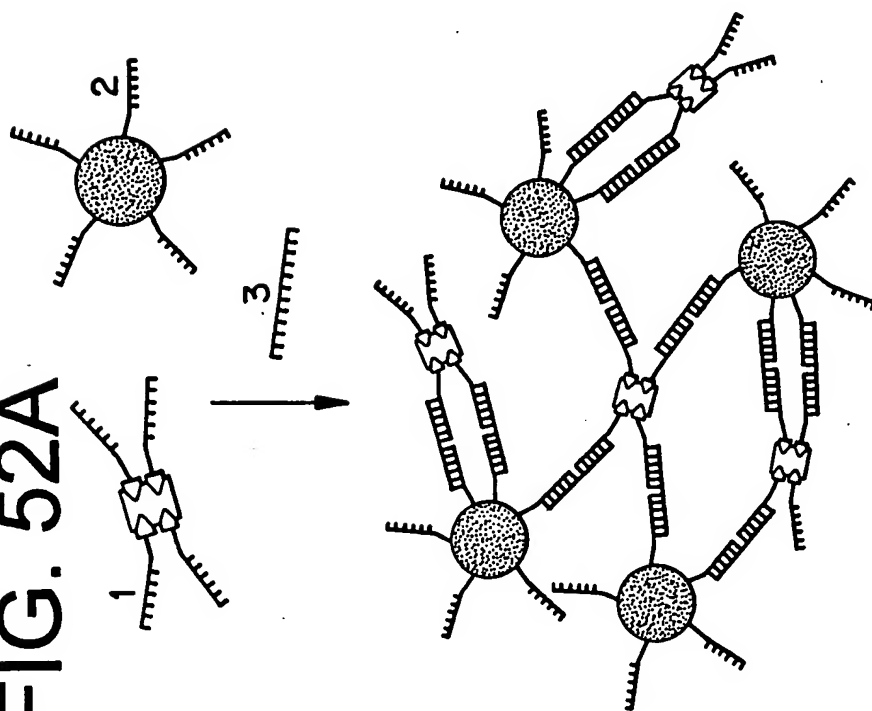


FIG. 52A



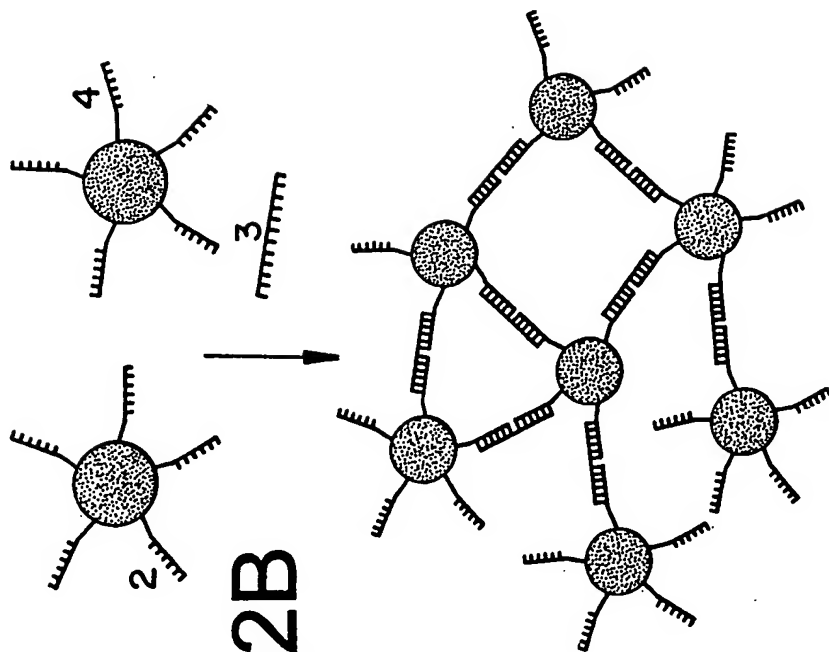
1 3' biotin-TEG-A₁₀-ATG CTC AAC TCT 5' [SEQ. ID NO. 73]

2 5' SH(CH₂)₆-A₁₀-CGC ATT CAG GAT 3' [SEQ. ID NO. 74]

3 5' TAC GAG TTG AGA ATC CTG AAT GCG 3' [SEQ. ID NO. 75]

● 13 nm Au NANOPARTICLES [] STREPTAVIDIN

FIG. 52B



2 5' SH(CH₂)₆-A₁₀-CGC ATT CAG GAT 3'

3 5' TAC GAG TTG AGA ATC CTG AAT GCG 3'

4 3' SH(CH₂)₃-A₁₀-ATG CTC AAC TCT 5'

● 13 nm Au NANOPARTICLES

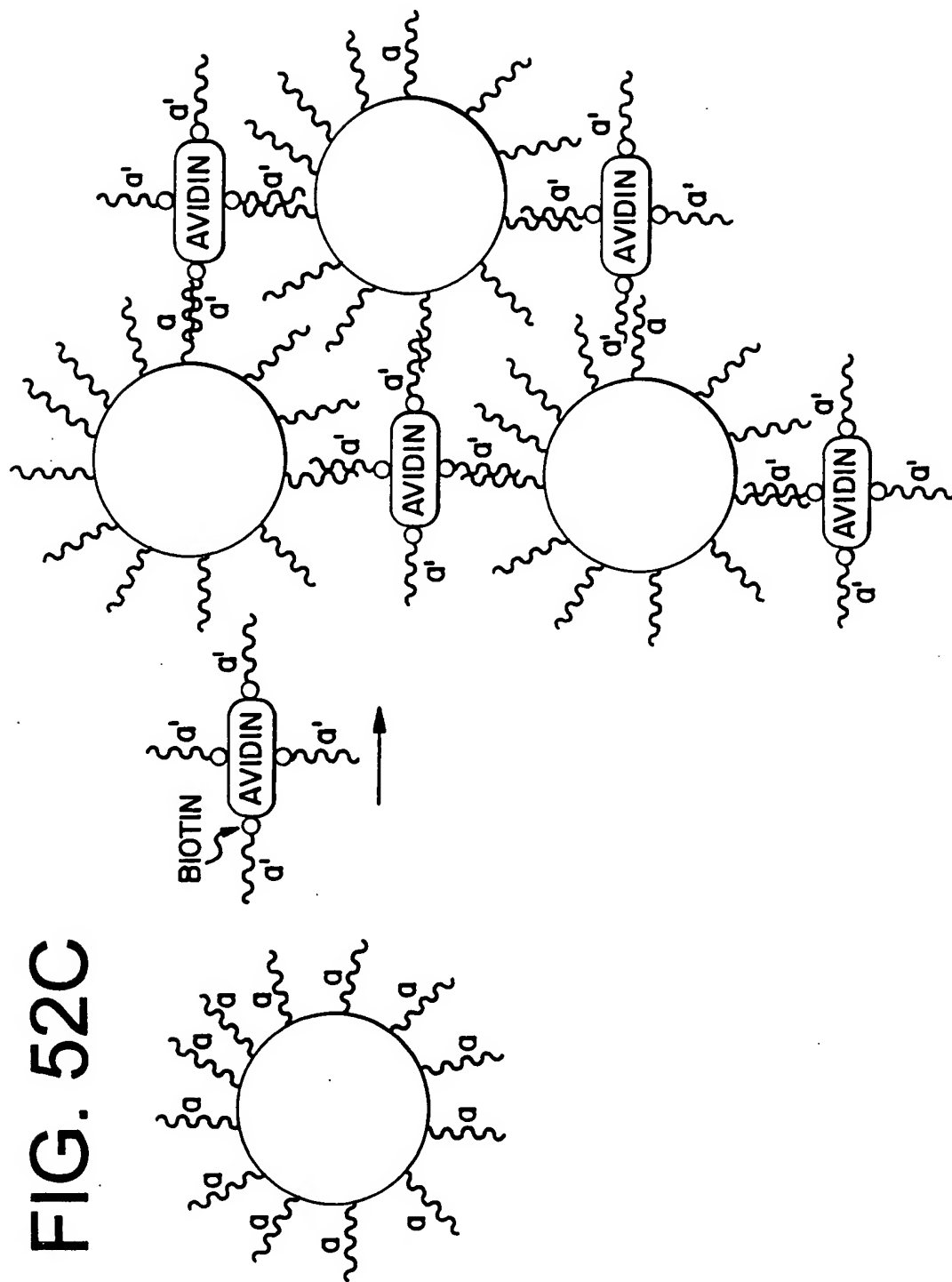


FIG. 53

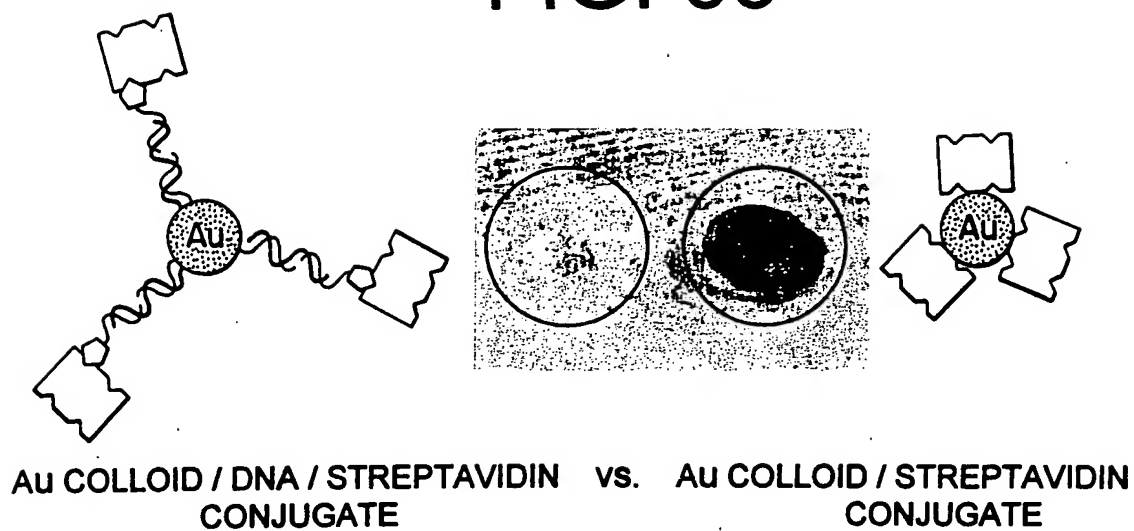


FIG. 54

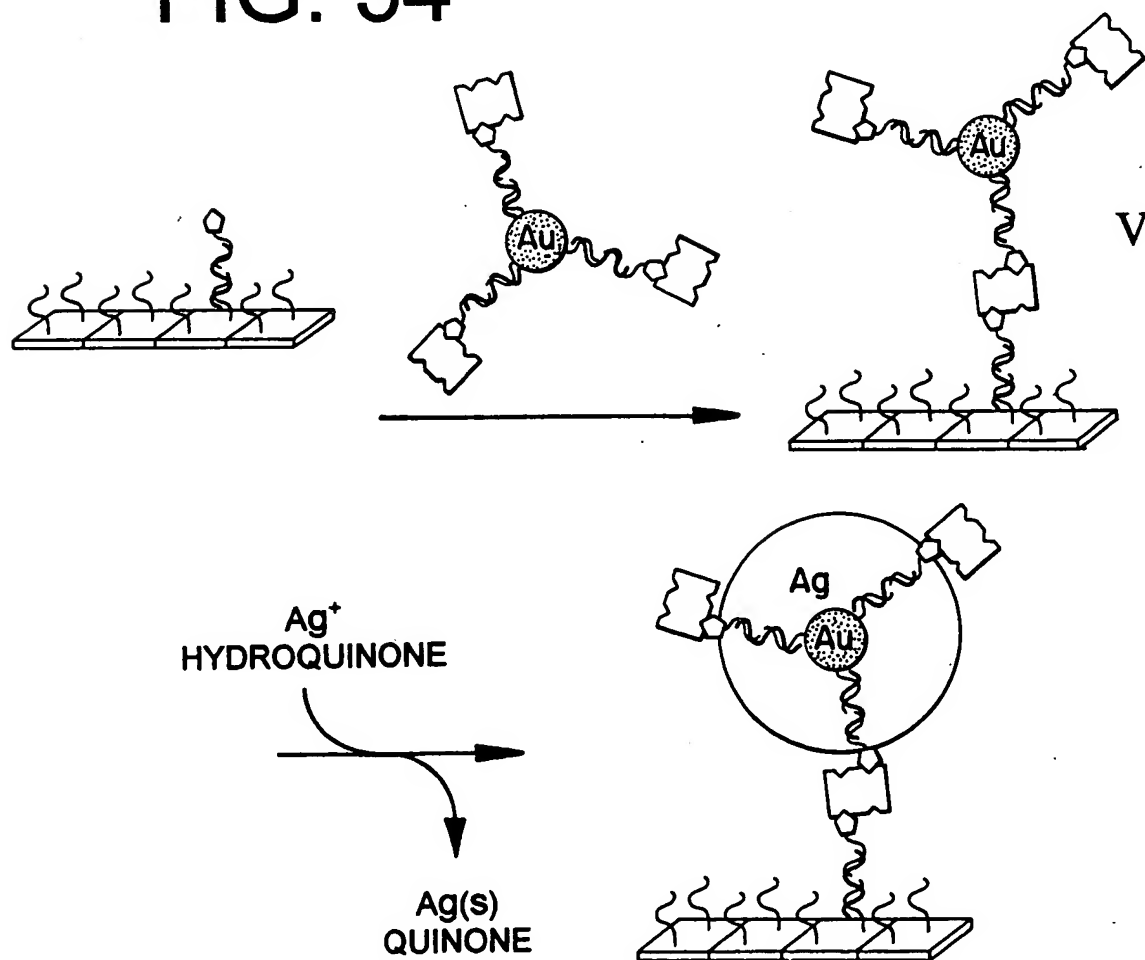


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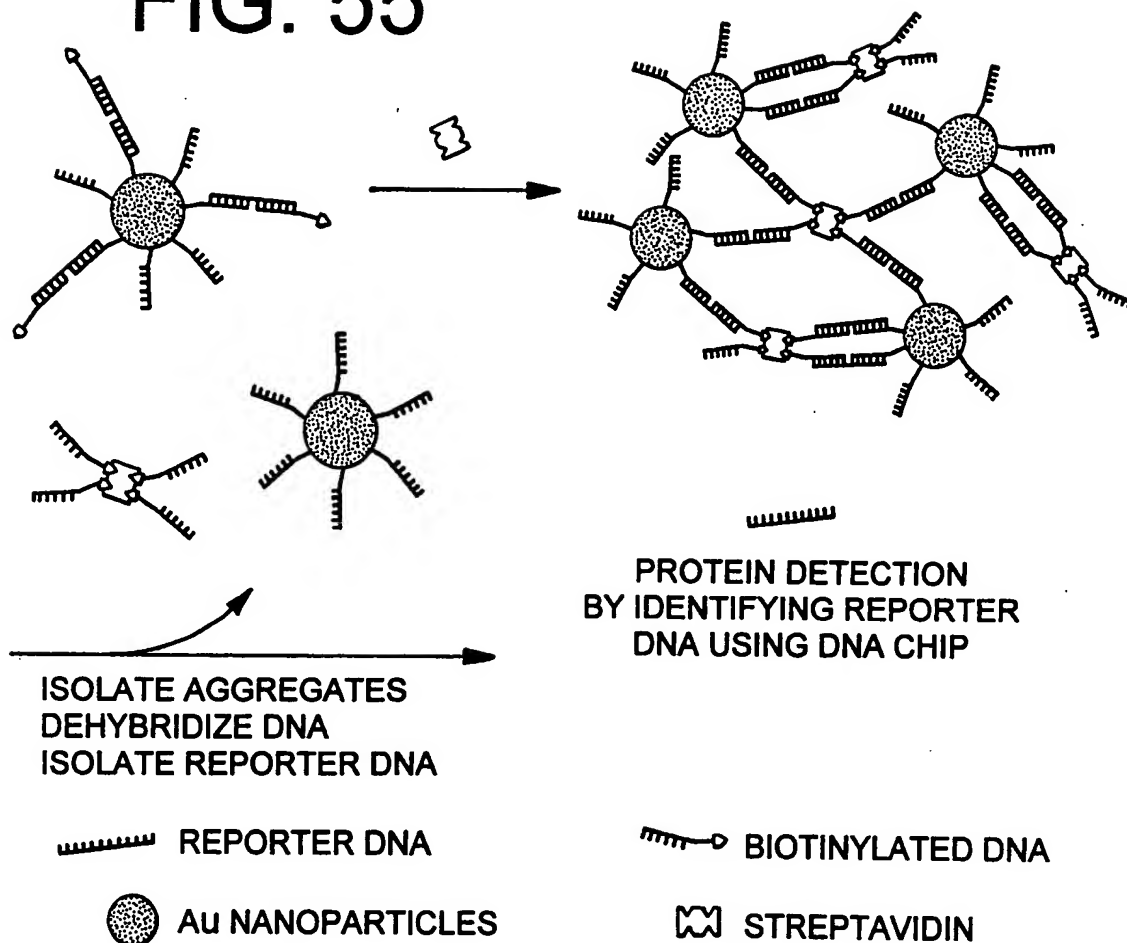


FIG. 56

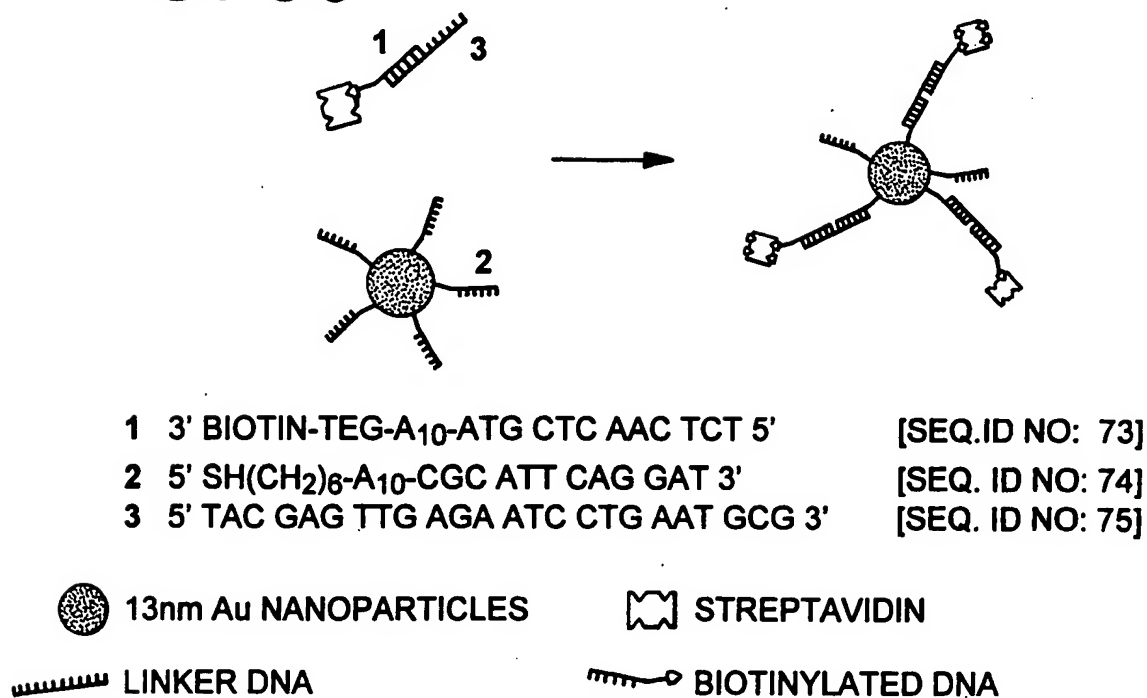


FIG. 57A

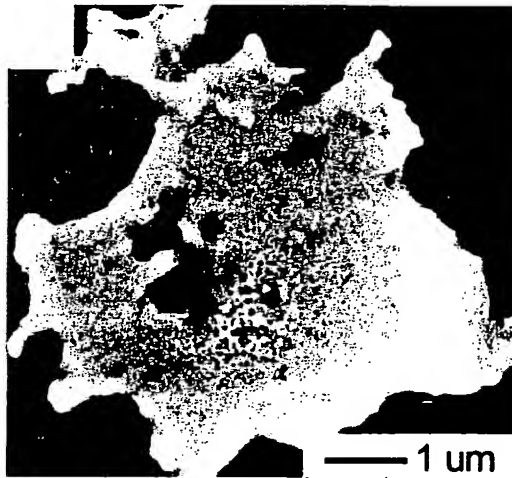


FIG. 57B



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FIG. 58A

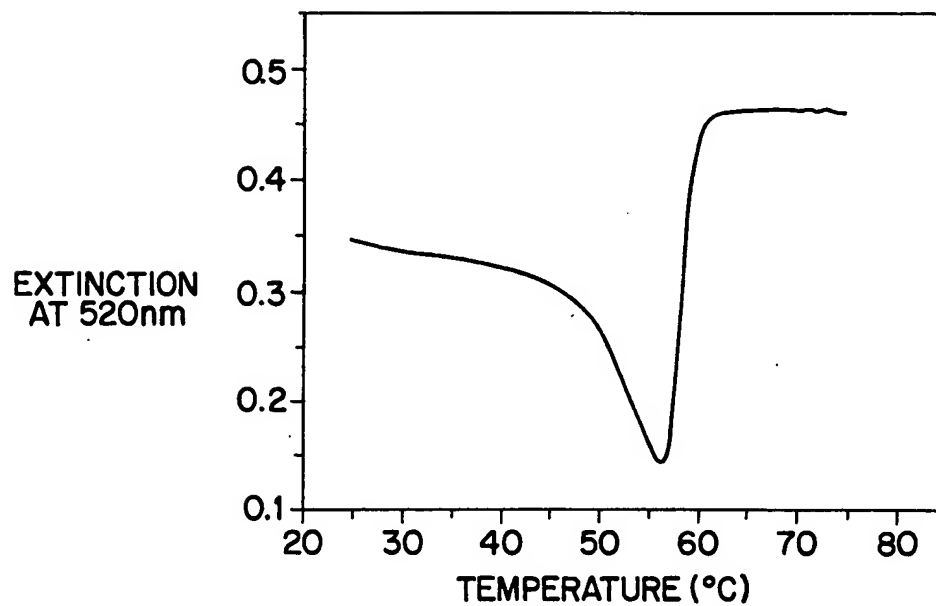


FIG. 58B

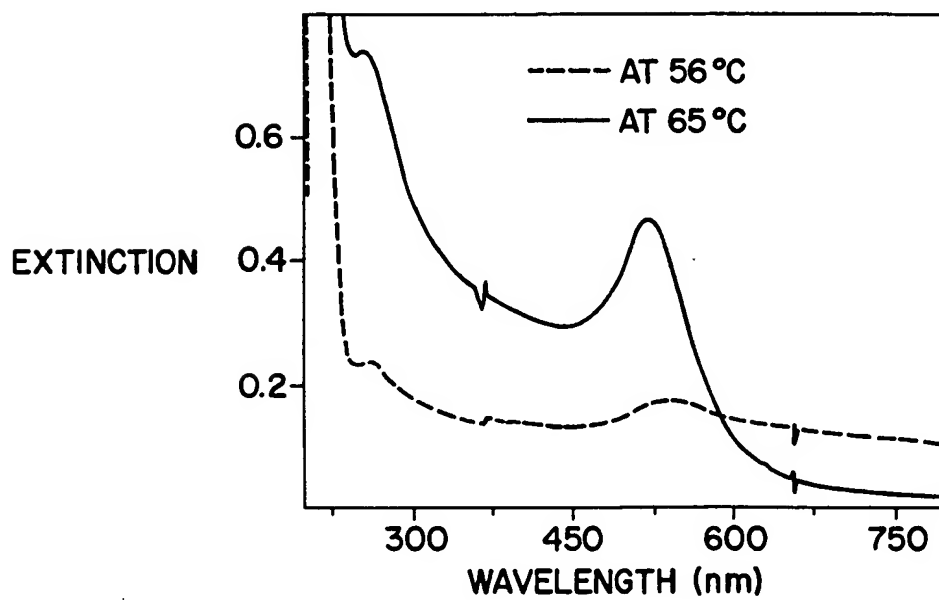


FIG. 59

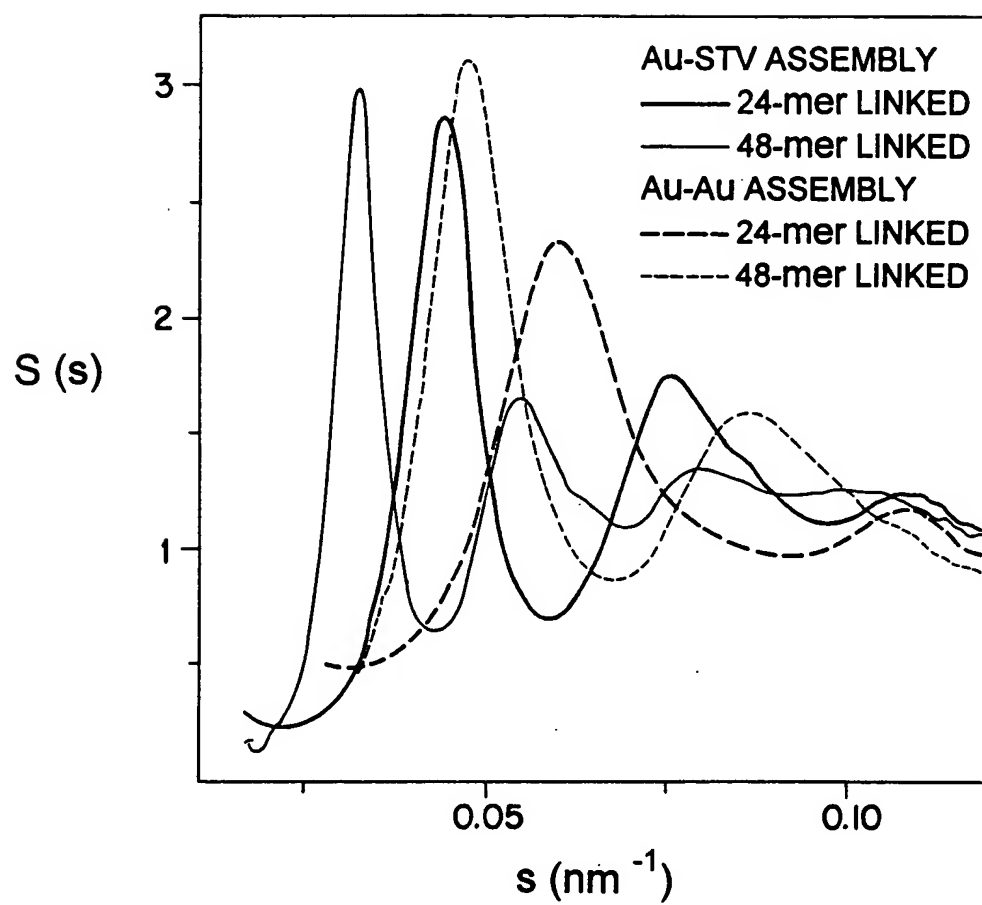
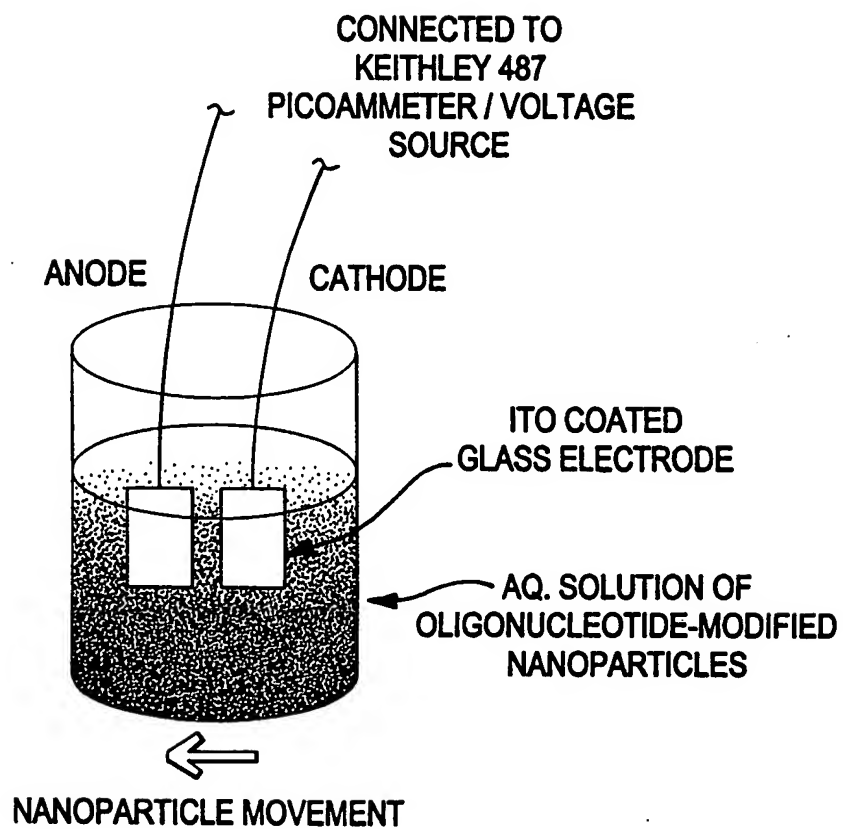


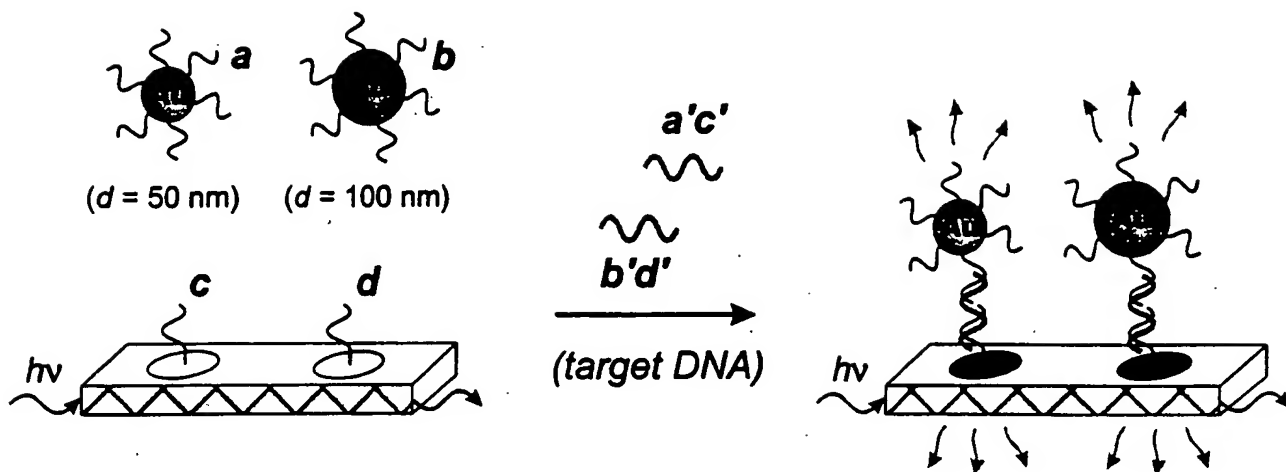
FIG. 60



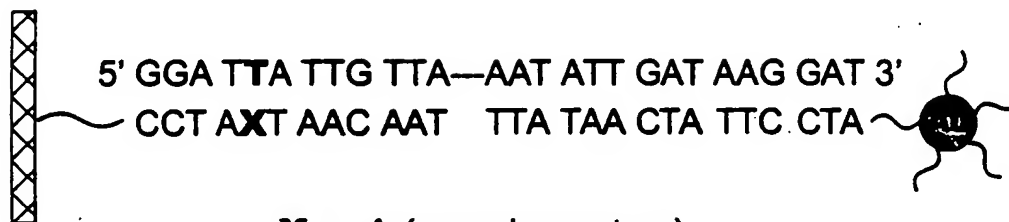
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Figure 6)

A



B



X = A (complementary),
G,C,T (mismatched)

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**Test for Target
Sequence *a'c'***

**Test for Target
Sequence *b'd'***

A



B



C



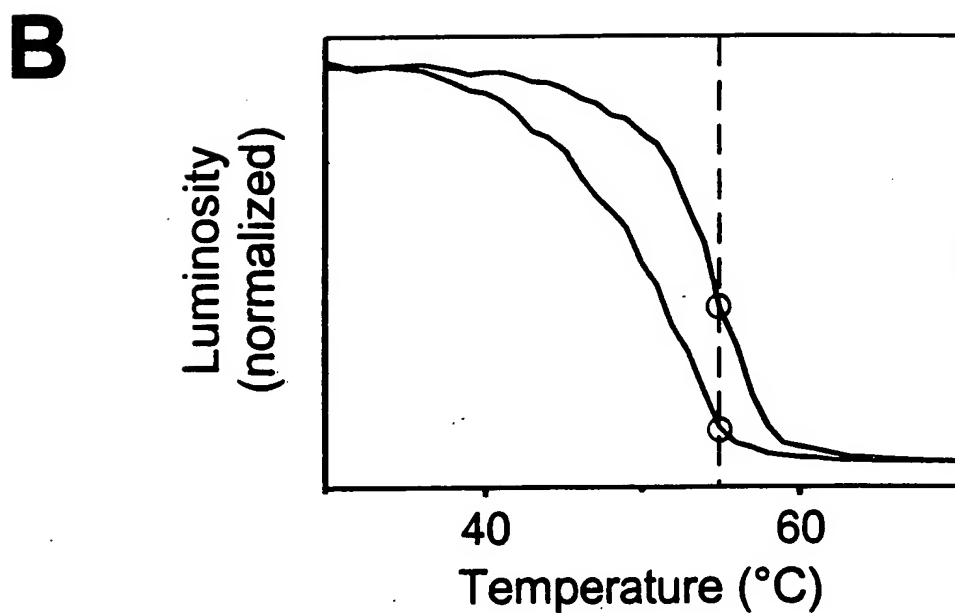
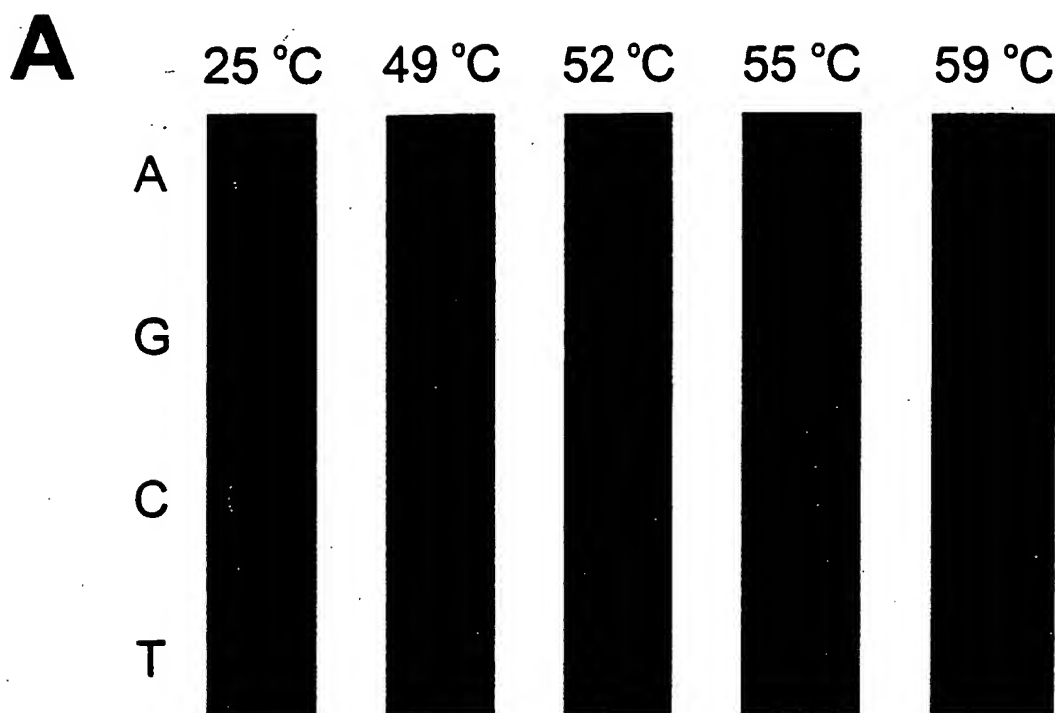
D



Figure 62

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G. Lu, T. A. Taton and C. A. Mirkin

Figure 63

Figure 64

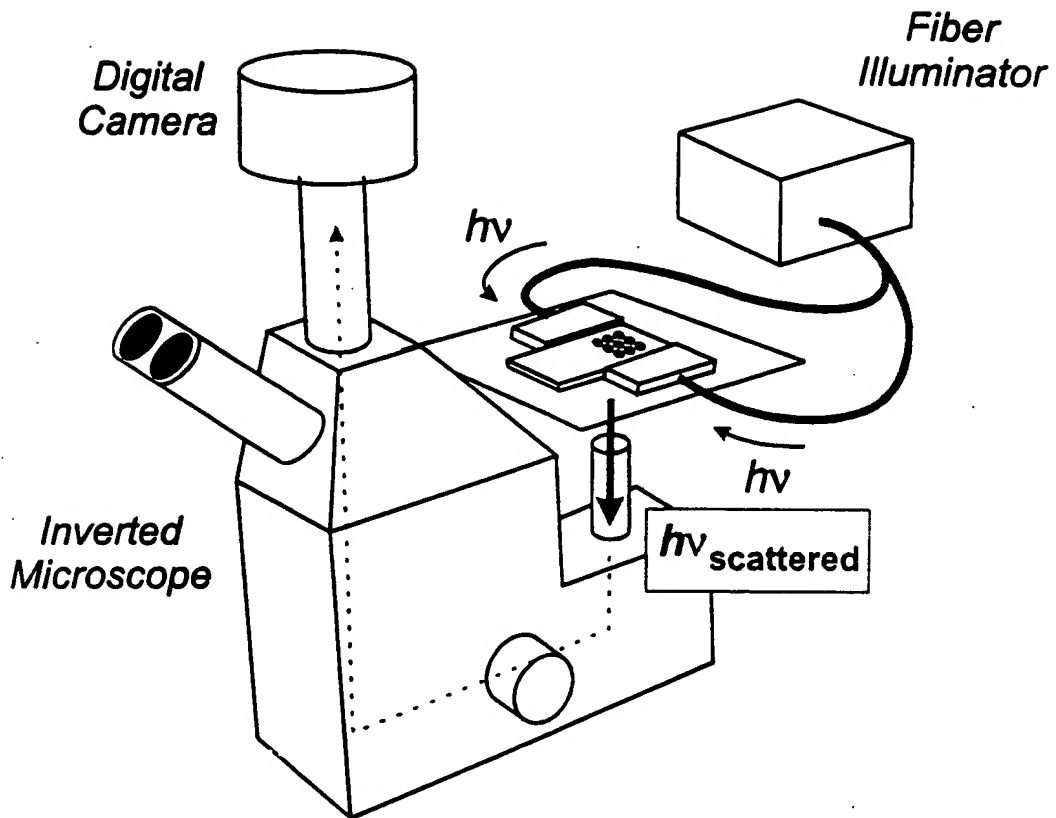
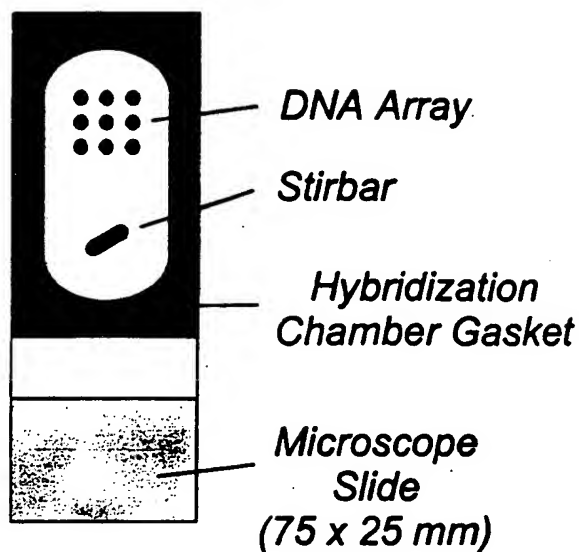


Figure 65

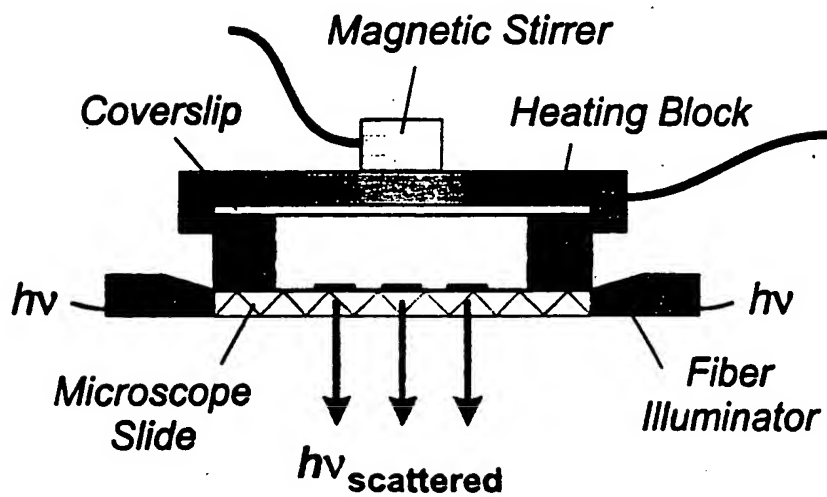
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S9

A



B



11/01

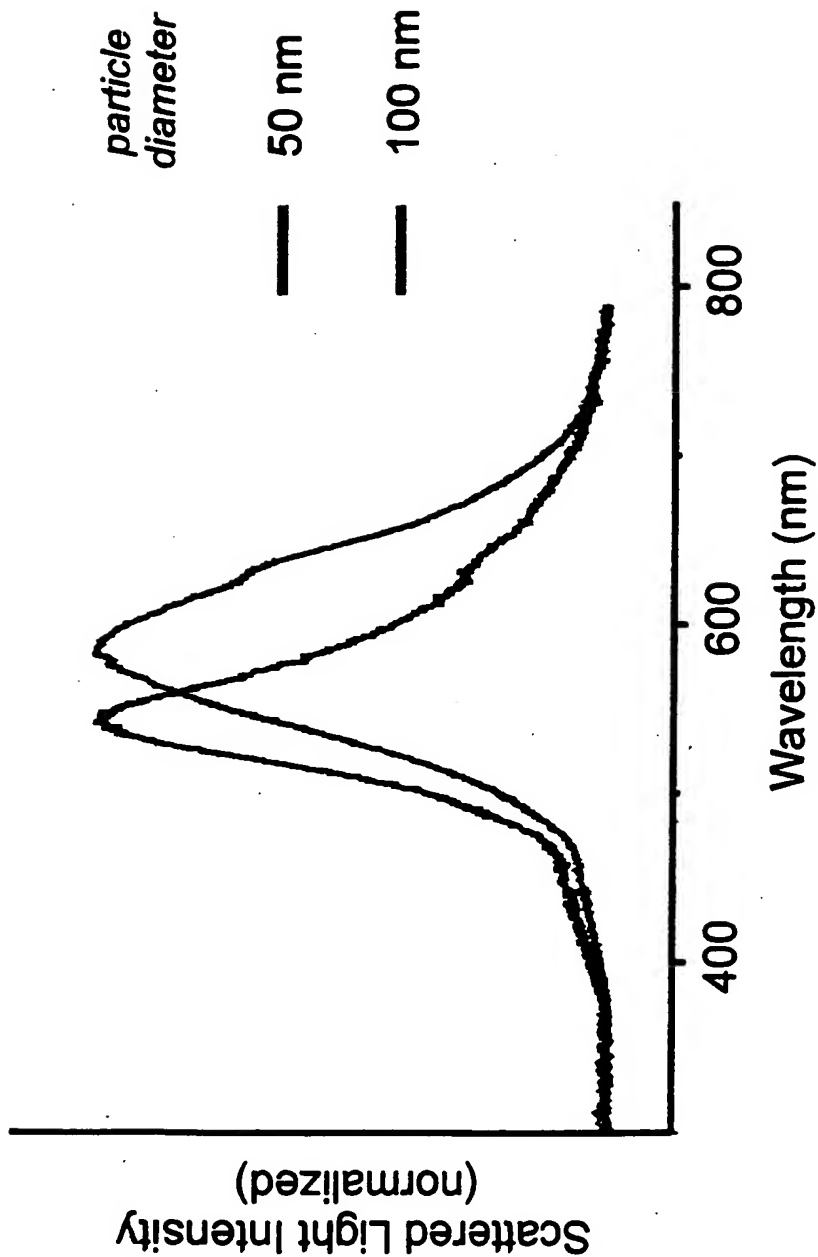


Figure 6b

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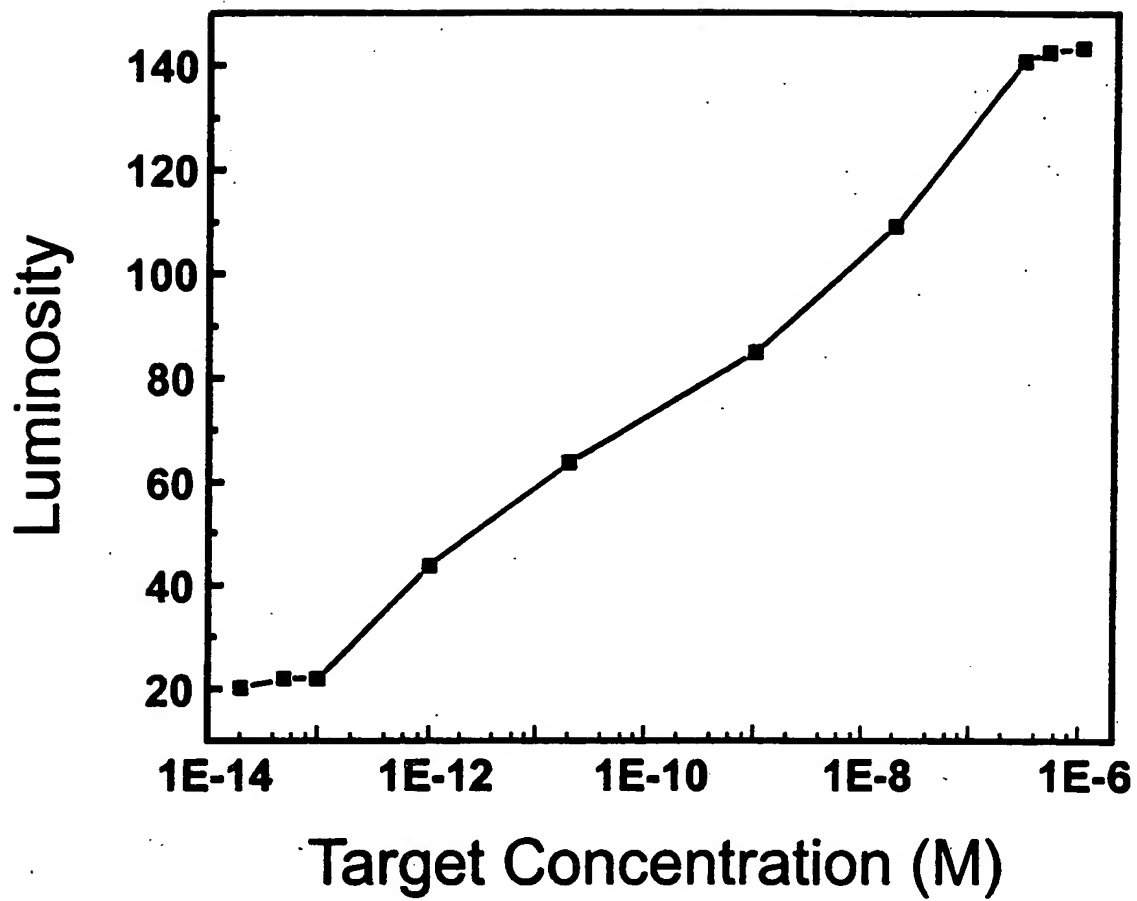


Figure 67